Service

Repair Manual
Eos 2006 ➤
Golf 2004 ➤
Golf Plus 2005 ➤

Brake System

Edition 03.2012

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Service Department. Technical Information

Service

List of Workshop Manual Repair Groups

Repair Group

00 - General, Technical Data
45 - Antilock Brake System
46 - Mechanical Components
47 - Hydraulic Components

Technical information should always be available to the foremen and mechanics, because their careful and constant adherence to the instructions is essential to ensure vehicle road-worthiness and safety. In addition, the normal basic safety precautions for working on motor vehicles must, as a matter of course, be observed.

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00 – General, Technical Data

1 General Information

(Edition 03.2012)

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⇒ “1.2 Eos”, page 1

⇒ “1.3 Rabbit/R32/GTI”, page 2

1.1 Brake PR Number, Allocating

The PR number on the vehicle data label describes which brake system is installed in the vehicle.

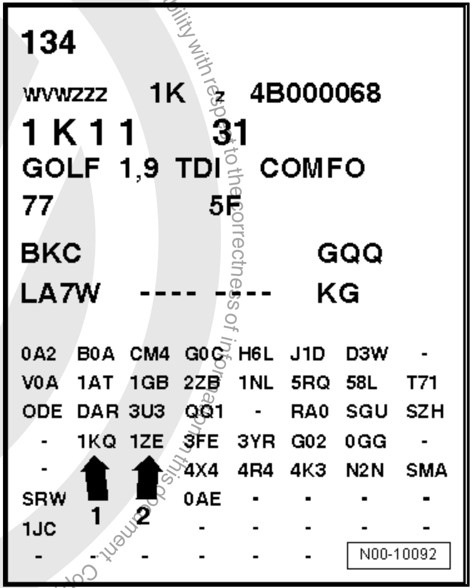
Example of a Vehicle Data Sticker

In this example the vehicle is equipped with the following brakes:

- Arrow 1 - rear brakes - 1KQ
- Arrow 2 - front brakes - 1ZE

The vehicle data label can be found in the spare wheel well as well as in the Maintenance booklet.

- Allocation, refer to the Parts Catalog.
- The following tables show the PR number code key. This is important in order to know the brake caliper/brake disc and brake pad combination.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1 K 1 1 31
GOLF 1,9 TDI COMFO
77 5F
BKC GQQ
LA7W ---- ---- KG
0A2 B0A CM4 G0C H6L J1D D3W -
V0A 1AT 1GB 2ZB 1NL 5RQ 58L T71
ODE DAR 3U3 QQ1 - RA0 SGU SZH
- 1KQ 1ZE 3FE 3YR G02 0GG -
- 4X4 4R4 4K3 N2N SMA
SRW 0AE - - - -
1JC - - - - -
- - - - - -

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1.2 Eos

⇒ “1.2.1 Front Brakes”, page 1

⇒ “1.2.2 Rear Brakes”, page 1

1.2.1 Front Brakes

Engine Version	PR Number	Front Wheel Brakes
2.0L - 147 kW FSI	1ZD	FN3 (16”)
3.2L - 184 kW		

1.2.2 Rear Brakes

Engine Version	PR Number	Rear Wheel Brakes
2.0L - 147 kW FSI	1KJ	CII 41 (16”)
3.2L - 184 kW		

1.3 Rabbit/R32/GTI

⇒ “1.3.1 Front Brakes”, page 2

⇒ “1.3.2 Rear Brakes, FWD”, page 2

⇒ “1.3.3 Rear Brakes, AWD”, page 2

1.3.1 Front Brakes

Engine Version	PR Number	Front Wheel Brakes
2.5L - 110 kW	1ZP	FN3 (15”)
2.0L - 147 kW FSI	1ZD / 1LV	FN3 (16”)
3.2L - 184 kW	1LM	FNR-G (17”)

1.3.2 Rear Brakes, FWD

Engine Version	PR Number	Rear Wheel Brakes
2.5L - 110 kW	1KE	CII 41 (15”)
2.0L - 147 kW FSI		
2.0L - 147 kW FSI	1KV	CII 38 (16”)

1.3.3 Rear Brakes, AWD

Engine Version	PR Number	Rear Wheel Brakes
2.0L - 110 kW FSI	1KF	CII 41 (15”)
3.2L - 184 kW	2EL	CII 41 (17”)

2 Specifications

⇒ “2.1 Front Brakes”, page 3

⇒ “2.2 Rear Brakes”, page 5

⇒ “2.3 Brake Booster and Master Cylinder Technical Data”, page 8

2.1 Front Brakes

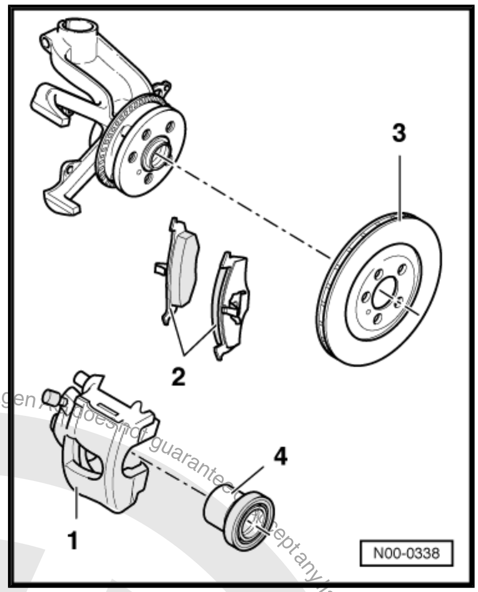
⇒ “2.1.1 FS III”, page 3

⇒ “2.1.2 FN 3”, page 4

⇒ “2.1.3 FNR-G ”, page 5

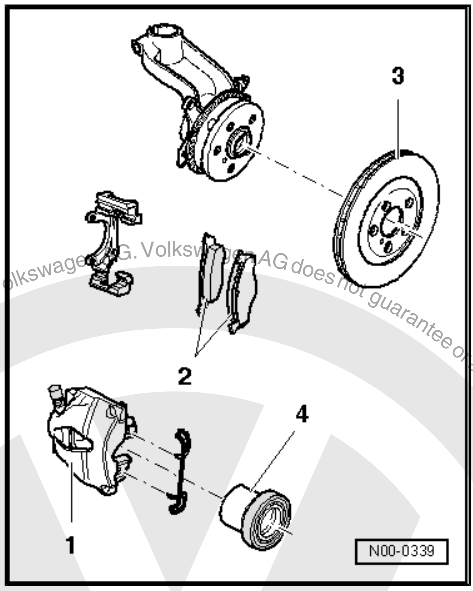
2.1.1 FS III

Item	PR Number		1ZF / 1ZM
1	Brake Caliper		FS III (15”)
2	Brake pad, thickness	mm	14
	Brake pad, wear limit without back plate	mm	2
3	Brake rotor	Diameter in mm	280
	Brake disc, thickness	mm	22
	Brake disc, wear limit	mm	19
4	Brake caliper, piston	Diameter in mm	54



2.1.2 FN 3

Item	PR Number		1ZE/1ZP
1	Brake Caliper		FN3 (15”)
2	Brake pad, thickness	mm	14
	Brake pad, wear limit without back plate	mm	2
3	Brake rotor	Diameter in mm	288
	Brake disc, thickness	mm	25
	Brake disc, wear limit	mm	22
4	Brake caliper, piston	Diameter in mm	54



Item	PR Number		1LJ / 1LL / 1ZD / 1LV
1	Brake Caliper		FN3 (16”)
2	Brake pad, thickness	mm	14
	Brake pad, wear limit without back plate	mm	2
3	Brake rotor	Diameter in mm	312
	Brake disc, thickness	mm	25
	Brake disc, wear limit	mm	22
4	Brake caliper, piston	Diameter in mm	54

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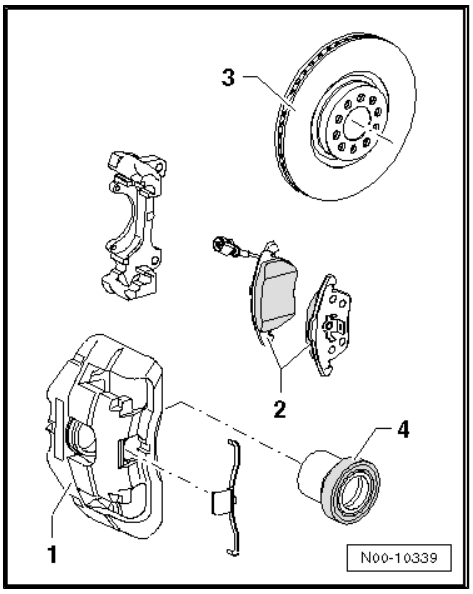
2.1.3 FNR-G

Item	PR Number		1LK / 1LM
1	Brake Caliper		FNR-G (17”)
2	Brake pad, thickness	mm	14
	Brake pad, wear limit without back plate	mm	2
3	Brake rotor	Diameter in mm	345
	Brake disc, thickness	mm	30
	Brake disc, wear limit	mm	27
4	Brake caliper, piston	Diameter in mm	57



2.2 Rear Brakes

⇒ “2.2.1 CI 38 ”, page 5

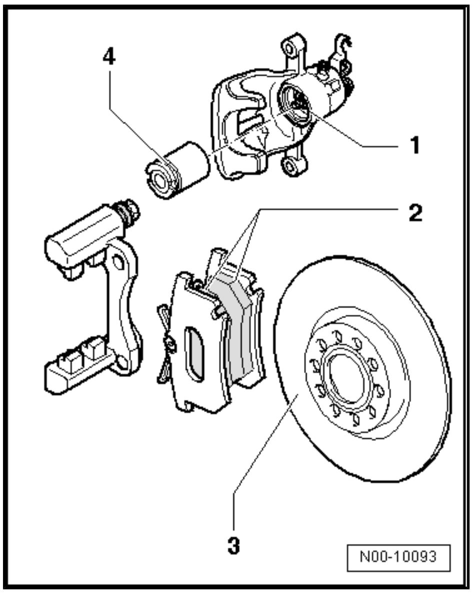
⇒ “2.2.2 CII 38 ”, page 6

⇒ “2.2.3 CII 41 ”, page 7

⇒ “2.2.4 Bosch ZOH 38, 16”", page 8

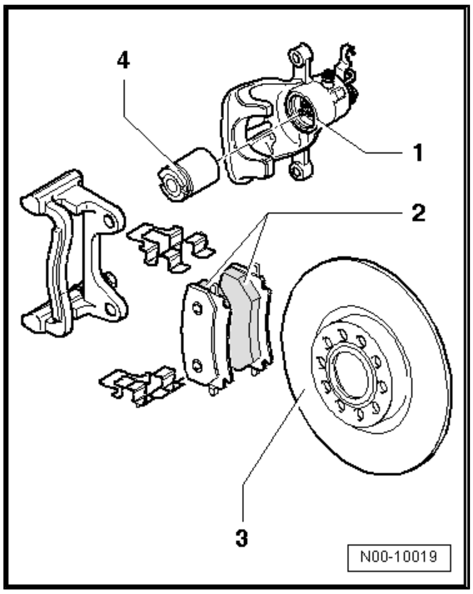
2.2.1 CI 38

Item	PR Number		1KQ / 1KD
1	Brake Caliper		CI 38 (15”)
2	Brake pad, thickness	mm	11
	Brake pad, wear limit without back plate	mm	2
3	Brake rotor	Diameter in mm	255
	Brake disc, thickness	mm	10
	Brake disc, wear limit	mm	8
4	Brake caliper, piston	Diameter in mm	38

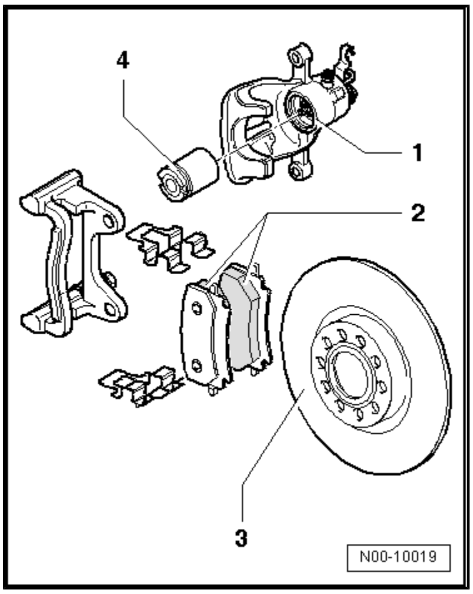


2.2.2 CII 38

Item	PR Number		1KY / 1KZ / 1KV
1	Brake Caliper		CII 38 (16”)
2	Brake pad, thickness	mm	11
	Brake pad, wear limit without back plate		2
3	Brake rotor	Diameter in mm	286
	Brake disc, thickness	mm	12
	Brake disc, wear limit		10
4	Brake caliper, piston	Diameter in mm	38



2.2.3 CII 41



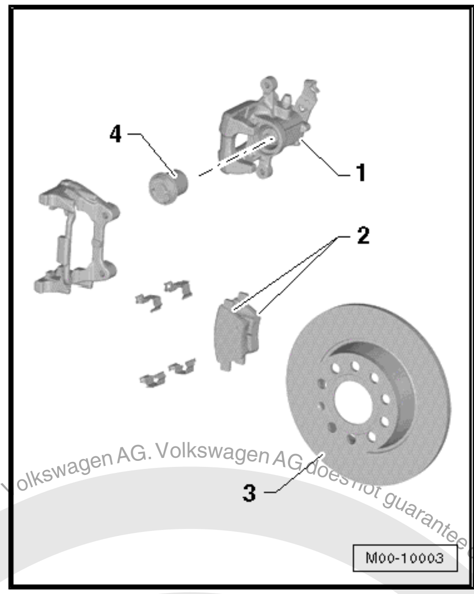
Item	PR Number		1KF / 1KE
1	Brake Caliper		CII 41 (15”)
2	Brake pad, thickness	mm	11
	Brake pad, wear limit without back plate	mm	2
3	Brake rotor	Diameter in mm	260
	Brake disc, thickness	mm	12
	Brake disc, wear limit	mm	10
4	Brake caliper, piston	Diameter in mm	41

Item	PR number		1KJ
1	Brake Caliper		CII 41 (16”)
2	Brake pad, thickness	mm	11
	Brake pad, wear limit without back plate	mm	2
3	Brake rotor	Diameter in mm	286
	Brake disc, thickness	mm	12
	Brake disc, wear limit	mm	10
4	Brake caliper, piston	Diameter in mm	41

Item	PR number		2EL / 2EA
1	Brake Caliper		CII 41 (17”)
2	Brake pad, thickness	mm	11
	Brake pad, wear limit without back plate	mm	2
3	Brake rotor	Diameter in mm	310
	Brake disc, thickness	mm	22
	Brake disc, wear limit	mm	20
4	Brake caliper, piston	Diameter in mm	41

2.2.4 Bosch ZOH 38, 16”

Item	PR Number		1KS
1	Brake Caliper		Bosch ZOH 38 (16”)
2	Brake pad, thickness without backing plate	mm	12
3	Brake rotor	Diameter in mm	272
	Brake disc, thickness	mm	10
4	Brake caliper, piston	Diameter in mm	38



2.3 Brake Booster and Master Cylinder Technical Data

Brake Master Cylinder	Diameter in mm	22
Brake booster (left hand drive)	Diameter in inches	10

3 Diagnosis and Testing

⇒ “3.1 Brake Testing with an Opposite-Running One-Axle Dynamometer, AWD ”, page 9

⇒ “3.2 Brake Testing with a Standard One-Axle Dynamometer, AWD,”, page 9

⇒ “3.3 Brake Testing, FWD”, page 10

3.1 Brake Testing with an Opposite-Running One-Axle Dynamometer, AWD

- The testing takes place on a test stand.
- During testing, manual transmission vehicles must in idle and automatic transmission vehicles must be in N.
- Always observe the test stand manufacturer instructions.

Note

The brake systems do not work when the ignition is off.

Moving in opposite directions means: The rollers on the brake test stand turn forward on the one side and backward on the other side.

This prevents the brake forces from being transmitted into the powertrain.

During testing, the wheel turning forward is measured, therefore two braking test are necessary on each axle.

Do not exceed a test speed of 6 km/h.

The Volkswagen approved test stand fulfill these conditions.

3.2 Brake Testing with a Standard One-Axle Dynamometer, AWD,

- The testing takes place on a test stand.
- During testing, manual transmission vehicles must in idle and automatic transmission vehicles must be in N.
- Always observe the test stand manufacturer instructions.

Note

The brake systems do not work when the ignition is off.

– Drive the vehicle forward onto the rollers.

– Turn off the engine and wait 2 seconds.

– Perform the braking test.

– Start the engine and wait approximately 5 seconds until there is enough vacuum.

– Drive the vehicle forward until the rear wheel are standing on the rollers.

– Turn off the engine and wait 2 seconds.

– Perform the braking test for the rear brakes.

– Start the engine and wait approximately 5 seconds until there is enough vacuum.

3.3 Brake Testing, FWD

♦ The testing takes place on a test stand.

♦ During testing, manual transmission vehicles must in idle and automatic transmission vehicles must be in N.

♦ Always observe the test stand manufacturer instructions.

Note

The brake systems do not work when the ignition is off.

Perform brake testing on a one-axle dynamometer

Do not exceed a test speed of 6 km/h.

The Volkswagen approved test stand fulfill these conditions.

45 – Antilock Brake System

1 General Information

⇒ “1.1 General Information”, page 11

⇒ “1.2 Repair Information”, page 11

1.1 General Information

The ABS brake system is divided diagonally (two circuits). The vacuum brake servo unit boosts the brakes pneumatically.

Models with ABS do not have a mechanical brake pressure regulator. A specially coordinated software program in the control module determines brake pressure allocation at the rear axle.

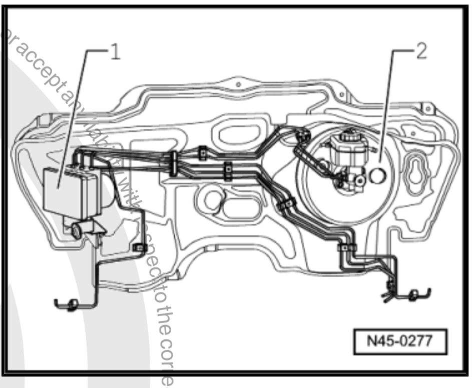
Note

ABS malfunctions do not affect the brake system and the booster. Conventional brake system stays operative even without ABS. A change in braking behavior should be checked. When the ABS warning lamp is lit up, the rear wheels may lock prematurely during braking!

ABS Allocation

1 - Hydraulic unit and control module

2 - Brake booster



Control module -1- and hydraulic unit -2- comprise a single unit. Separation can only be performed when removed from vehicle. The hydraulic pump -3- must not be separated from the hydraulic unit.

Separation is not possible on vehicles with ABS/EDL/ASR/ESP with hydraulic brake booster or hill assist.

1.2 Repair Information

- Before carrying out repair work on the anti-lock braking system, as well as the control module coding, determine the cause of the malfunction using “guided fault finding”.

“Guided fault finding” is performed with On Board Diagnosis, using the vehicle diagnostic tester .

- Turn off the ignition and disconnect the battery ground cable.

- Carry out before welding with an electric welding tool, refer to ⇒ General Information; Body Repairs, Body Collision Repair .
- When working with brake fluid, observe relevant safety precautions and notes, ⇒ “1.1 Brake System, Bleeding”, page 107 .
- After finishing any work that required opening the brake system, bleed the brake system using the Brake Charger/Bleeder Unit - VAS 5234- or -V.A.G 1869- , refer to ⇒ “1.1 Brake System, Bleeding”, page 107 .
- During final road test, carry out at least one ABS-controlled braking operation (appropriate pulsations must be felt at brake pedal).
- Absolute cleanliness is required when working on the anti-lock brake system, it is not permitted to use any products which contain mineral oil, such as oils, greases etc.
- Thoroughly clean all unions and the adjacent areas before loosening. Do not use aggressive cleaning agents such as brake cleaner, fuel, thinners or similar chemicals.
- Place parts that have been removed on a clean surface and cover.
- After disconnecting control module/hydraulic unit, use transport protection for valve domes.
- Carefully cover or seal open components, if repairs are not carried out immediately (Sealing plugs, use repair kit 1 H0 698 311 A).
- Only use lint-free cloths.
- Only unpack replacement parts immediately prior to installation.
- Only use parts in their original packaging.
- Do not work with compressed air and do not move vehicle while the system is open.
- Do not touch the contact surface on the connector, the pressure sensor and control module, as well as the silicone gel.
- When painting, electronic control module can be exposed to a maximum temperature of. 95 °C only briefly, and to a maximum of 85 °C for longer periods (approximately 2 hours). Make sure that brake fluid does not enter harness connectors.

2 Description and Operation

⇒ “2.1 Vehicle Diagnostic Tester Connecting and Selection Functions”, page 13

⇒ “2.2 Electrical and Electronic Components and Component Locations”, page 14

⇒ “2.3 Level Control System Indicator Lamps”, page 21

⇒ “2.4 ABS Mark 70 (ABS/ASR)”, page 22

⇒ “2.5 ABS Mark 60, ABS, EDL, ASR and ESP, through Calendar Week 22.2008”, page 25

⇒ “2.6 ABS Mark 60, ABS, EDL, ASR and ESP, from Calendar Week 22.2008”, page 27

⇒ “2.7 ABS Components, Front Axle”, page 28

⇒ “2.8 ABS Components, Rear Axle, FWD”, page 29

⇒ “2.9 ABS Components, Rear Axle, AWD”, page 30

2.1 -Vehicle Diagnostic Tester- Connecting and Selection Functions

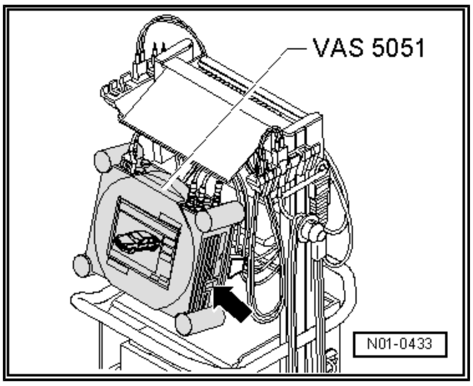
Special tools and workshop equipment required

- Vehicle Diagnostic Tester - VAS 5051-
- Diagnostic Cable -VAS 5051/1- or -VAS 5051/3-

⚠ WARNING

- *During a test drive, the testing and measuring equipment must always be secured on the back seat.*
- *These devices may be operated only by a passenger during a test drive.*

– Connect diagnostic cable -VAS 5051/1- or -VAS 5051/3- to diagnostic connection.



– Switch on tester -arrow-.

The tester is operational when it displays a picture of a car.

– Switch on ignition.

– Touch `Guided Fault Finding`.

– Select in succession:

◆ Brand

◆ Type

◆ Model year

◆ Version

◆ Engine Code

– Confirm data entered.

Wait until tester has checked all control modules in vehicle.

– Press `GO TO` and select “function/component selection”.

– Select on display “Running gear”

– Select on display “Brake system”

– Select “01-On Board Diagnostic (OBD) capable system...” indicated on display.

– Select on display “Anti-lock brake system ...”.

– Select “function” indicated on display.

Now, all possible functions of the anti-lock brake system installed in the vehicle will be displayed.

– Select desired function on display.

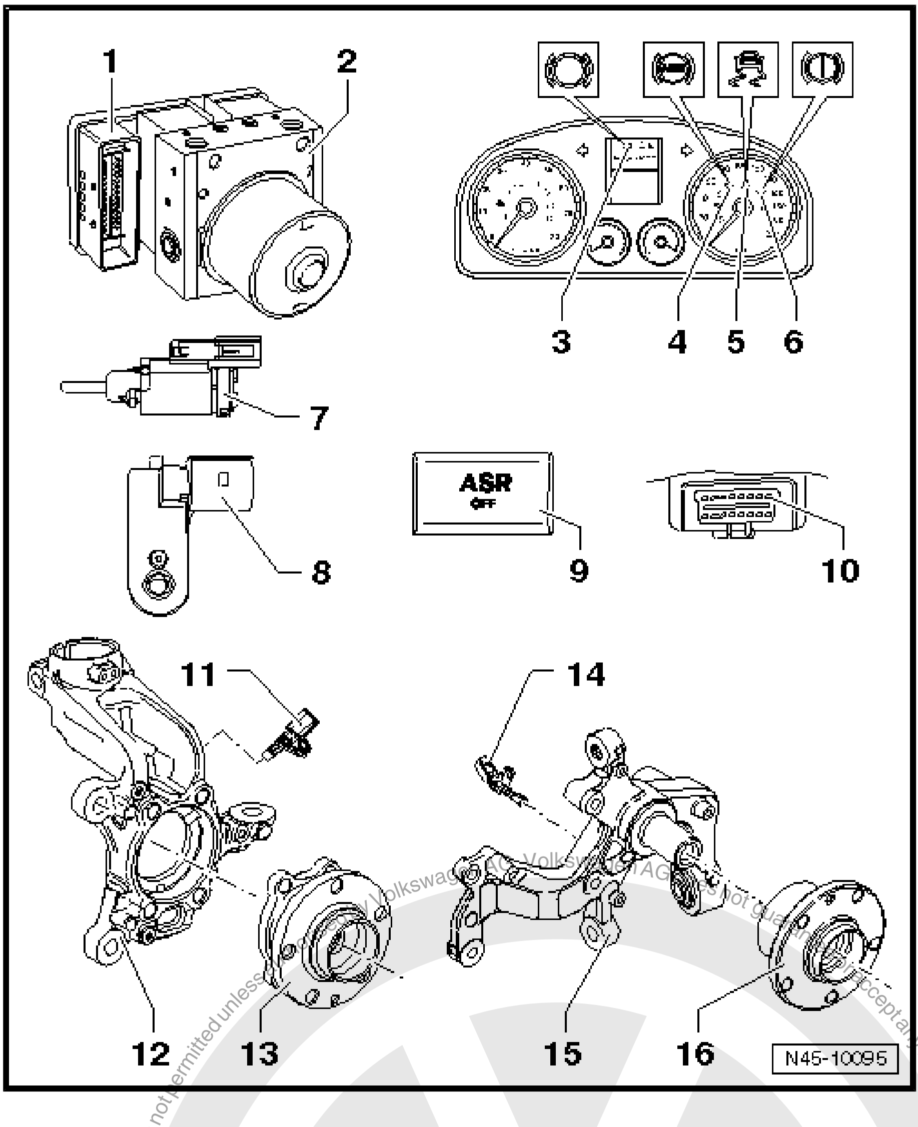
2.2 Electrical and Electronic Components and Component Locations

⇒ “2.2.1 ABS Mark 70 (ABS/ASR)”, page 14

⇒ “2.2.2 ABS Mark 60, ABS, EDL, ASR and ESP, through Calendar Week 22.2008”, page 17

⇒ “2.2.3 ABS Mark 60, ABS, EDL, ASR and ESP, from Calendar Week 22.2008”, page 19

2.2.1 ABS Mark 70 (ABS/ASR)



1 - ABS Control Module - J104-

- ☐ Component location: At hydraulic unit on right side of engine compartment.
- ☐ Do not disconnect connector before successfully completing On Board Diagnostic (OBD). Switch ignition off before separating connector.
- ☐ Removing and Installing, refer to ⇒ “4.1.2 Control Module and Hydraulic Unit, Removing”, page 33

2 - ABS Hydraulic Unit - N55-

- ☐ Component location: inside the engine compartment on the right side.

The hydraulic unit consists of the components:

- ☐ ABS hydraulic pump - V64-
- ☐ Valve block (contains the in/outlet valves)
- ☐ ABS Hydraulic Pump - V64- and valve block must not be separated from each other.
- ☐ Removing and Installing, refer to ⇒ “4.1.2 Control Module and Hydraulic Unit, Removing”, page 33 .

3 - Brake Pad Wear Indicator Lamp - K32-

- ☐ Component location: Inside the instrument cluster.
- ☐ Function: ⇒ “2.3 Level Control System Indicator Lamps”, page 21 .

4 - ABS Indicator Lamp - K47-

- ☐ Component location: Inside the instrument cluster.
- ☐ Function, refer to ⇒ “2.3 Level Control System Indicator Lamps”, page 21 .

5 - Traction Control Indicator Lamp - K86-

- ☐ Component location: Inside the instrument cluster.
- ☐ Function, refer to ⇒ “2.3 Level Control System Indicator Lamps”, page 21 .

6 - Brake System Indicator Lamp - K118-

- ☐ Component location: Inside the instrument cluster.
- ☐ Function, refer to ⇒ “2.3 Level Control System Indicator Lamps”, page 21 .

7 - Brake Lamp Switch - F- to CW 45/05

- ☐ Includes Brake Pedal Switch - F47- .
- ☐ Component location: on brake pedal.
- ☐ Removing, installing and adjusting, refer to ⇒ “3.6 Brake Lamp Switch F , through 04 November 2005”, page 102 .

8 - Brake Lamp Switch - F- from CW 45/05

- ☐ Includes Brake Pedal Switch - F47- .
- ☐ Component location: On brake master cylinder.
- ☐ Removing and Installing, refer to ⇒ “5.5 Brake Lamp Switch F 07 November 2005”, page 138 .

9 - ASR/ESP Button - E256-

- ☐ Component location: Inside center console.

10 - Diagnostic Connection

- ☐ Component location: cover in driver footwell.

11 - Right Front ABS Wheel Speed Sensor - G45- / Left Front ABS Wheel Speed Sensor - G47-

- ☐ Removing and Installing, refer to ⇒ “2.7 ABS Components, Front Axle”, page 28 .

12 - Wheel Bearing Housing

13 - Wheel Bearing/Hub Unit

- ☐ The ABS sensor ring is installed in the wheel bearing.

14 - Right Rear ABS Wheel Speed Sensor - G44- / Left Rear ABS Wheel Speed Sensor - G46-

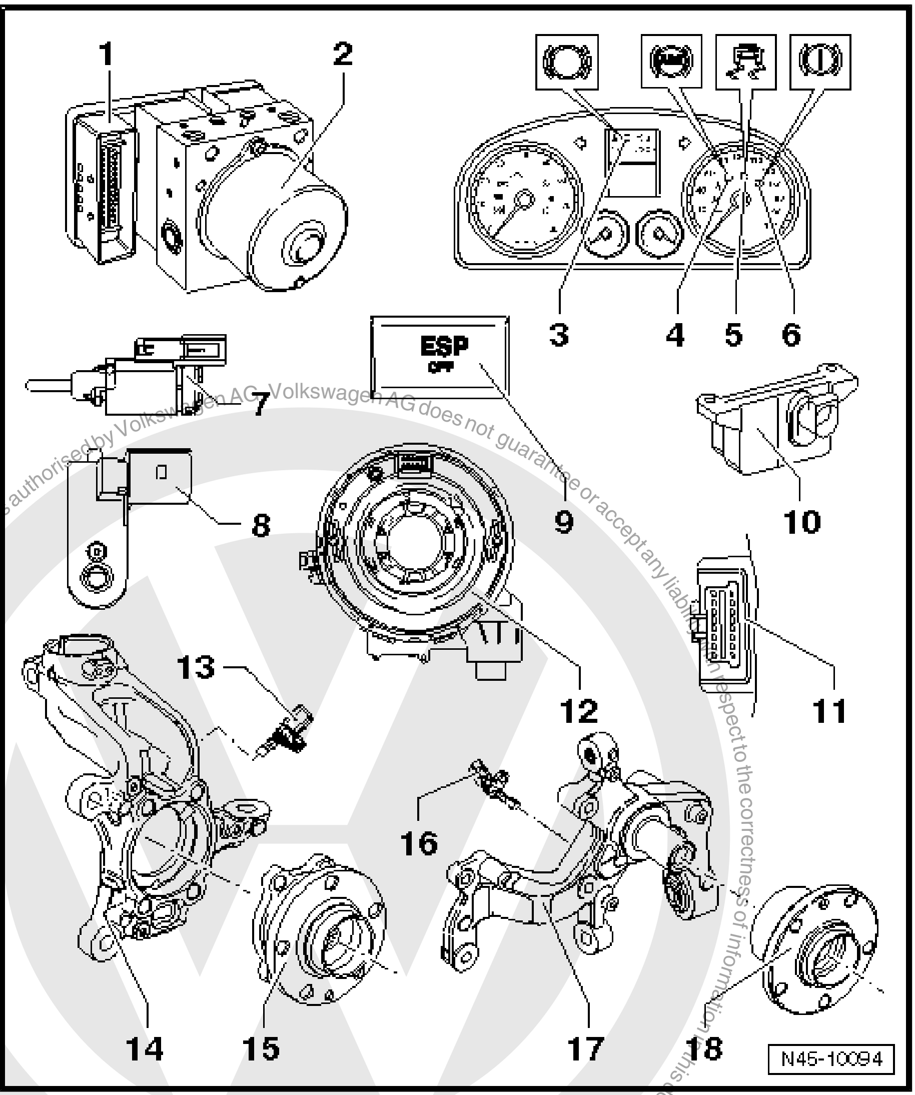
- ☐ Removing and installing (Front Wheel Drive -FWD-), refer to ⇒ “2.8 ABS Components, Rear Axle, FWD”, page 29 .
- ☐ Installing and removing (all wheel drive), refer to ⇒ “2.9 ABS Components, Rear Axle, AWD”, page 30 .

15 - Rear Axle Body with Stub Axle

16 - Wheel Hub with Wheel Bearing

- ☐ The ABS sensor ring is installed in the wheel bearing.

2.2.2 ABS Mark 60, ABS, EDL, ASR and ESP, through Calendar Week 22.2008



1 - ABS Control Module - J104-

- ❑ Component location: At hydraulic unit on right side of engine compartment.
- ❑ Do not disconnect connector before successfully completing On Board Diagnostic (OBD). Switch ignition off before separating connector.
- ❑ Removing and Installing, refer to ⇒ “4.3.1 Brake Lines from Brake Master Cylinder, Connecting to Hydraulic Unit”, page 42 .

2 - ABS Hydraulic Unit - N55-

- ❑ Component location: inside the engine compartment on the right side.

The hydraulic unit consists of the components:

- ❑ ABS hydraulic pump - V64- .
- ❑ Brake pressure sensor - G201- .
- ❑ Valve block (contains the in/outlet valves).
- ❑ The ABS hydraulic pump - V64- and valve block must not be separated from one another.
- ❑ Removing and Installing, refer to ⇒ “4.3.1 Brake Lines from Brake Master Cylinder, Connecting to Hydraulic Unit”, page 42 .

3 - Brake Pad Wear Indicator Lamp - K32-

- ❑ Component location: Inside the instrument cluster.
- ❑ Function, refer to ⇒ “2.3 Level Control System Indicator Lamps”, page 21 .

4 - ABS Indicator Lamp - K47-

- ❑ Component location: Inside the instrument cluster.
- ❑ Function, refer to ⇒ “2.3 Level Control System Indicator Lamps”, page 21 .

5 - ASR/ESP Indicator Lamp - K155-

- ❑ Only on vehicles with ABS/EDL/ASR/ESP.
- ❑ Component location: Inside the instrument cluster.
- ❑ Function, refer to ⇒ “2.3 Level Control System Indicator Lamps”, page 21 .

6 - Brake System Warning Lamp - K118-

- ❑ Component location: Inside the instrument cluster.
- ❑ Function, refer to ⇒ “2.3 Level Control System Indicator Lamps”, page 21 .

7 - Brake Lamp Switch - F- through CW 45/05

- ❑ Includes brake pedal switch - F47- .

- ☐ Component location: on brake pedal.
- ☐ Removing and Installing, refer to ⇒ “3.6 Brake Lamp Switch F through 04 November 2005”, page 102 .

8 - Brake Lamp Switch - F- from CW 45/05

- ☐ Includes brake pedal switch - F47- .
- ☐ Component location: On brake master cylinder.
- ☐ Removing and Installing, refer to ⇒ “5.5 Brake Lamp Switch F 07 November 2005”, page 138 .

9 - ASR/ESP Button - E256-

- ☐ Only on vehicles with ABS/EDL/ASR/ESP.
- ☐ Component location: Inside center console.

10 - ESP-Sensor Unit - G419-

- ☐ Only on vehicles with ABS/EDL/ASR/ESP.
- ☐ Golf and Eos location: under the right front seat.
- ☐ Combined Transverse Acceleration Sensor - G200- , Rotation Rate Sensor - G202- and Longitudinal Acceleration Sensor - G251- .
- ☐ Combined in one housing.
- ☐ Removing and installing (Golf, Eos), refer to ⇒ “4.7 ESP Sensor Unit G419 ”, page 47 .

11 - Diagnostic Connection

- ☐ Component location: cover in driver footwell.

12 - Steering Angle Sensor - G85-

- ☐ Component location: On steering column between steering wheel and steering column switch
- ☐ Removing and Installing, refer to ⇒ “4.8 Steering Angle Sensor G85 ”, page 48

13 - Right Front ABS Wheel Speed Sensor - G45- / Left Front ABS Wheel Speed Sensor - G47-

- ☐ Removing and Installing, refer to ⇒ “2.7 ABS Components, Front Axle”, page 28

14 - Wheel Bearing Housing

15 - Wheel Bearing/Hub Unit

- ☐ The ABS sensor ring is installed in the wheel bearing.

16 - Right/Left Rear ABS Wheel Speed Sensor - G44- / Left Rear ABS Wheel Speed Sensor - G46-

Front wheel drive shown

- ☐ Removing and installing (Front Wheel Drive -FWD-), refer to ⇒ “2.8 ABS Components, Rear Axle, FWD”, page 29 .
- ☐ Installing and removing (all wheel drive), refer to ⇒ “2.9 ABS Components, Rear Axle, AWD”, page 30 .

17 - Wheel Bearing Housing

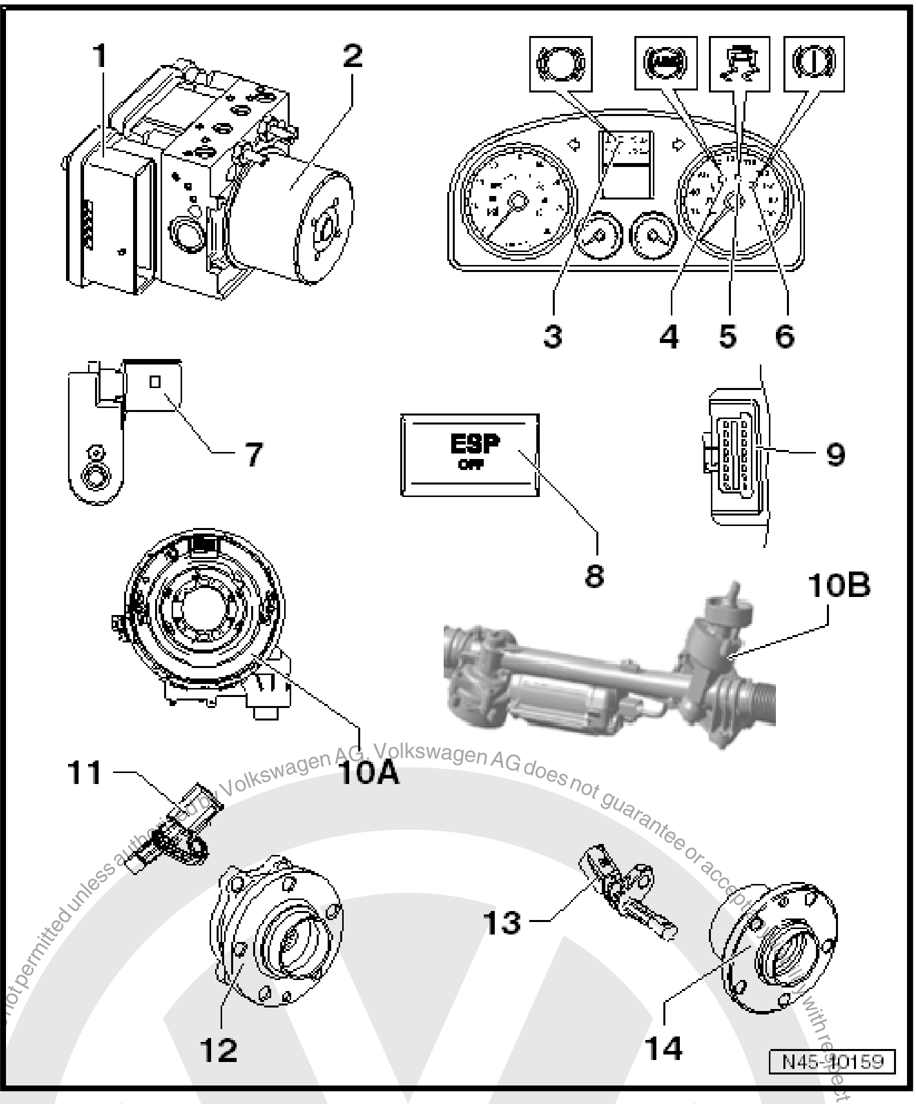
Front wheel drive shown

18 - Wheel Bearing/Hub Unit

Front wheel drive shown

- ☐ The ABS sensor ring is installed in the wheel bearing.

2.2.3 ABS Mark 60, ABS, EDL, ASR and ESP, from Calendar Week 22.2008



1 - ABS Control Module - J104-

- ☐ Component location: At hydraulic unit on right side of engine compartment.
- ☐ Do not disconnect connector before successfully completing On Board Diagnostic (OBD). Switch ignition off before separating connector.

The following components are integrated inside the control module:

- ♦ Sensor for transverse acceleration - G200-
- ♦ Rotation Rate Sensor - G202-
- ♦ Longitudinal acceleration sensor - G251- (on AWD vehicles and with hill assist)
  - ☐ Removing and Installing, refer to ⇒ “4.2.2 Control Module and Hydraulic Unit, Removing”, page 38

2 - ABS Hydraulic Unit - N55-

- ☐ Component location: inside the engine compartment on the right side.

The hydraulic unit consists of the components:

- ☐ ABS hydraulic pump - V64-
- ☐ Brake pressure sensor - G201-
- ☐ Valve block (contains the in/outlet valves)
- ☐ The ABS hydraulic pump - V64- and valve block must not be separated from one another.
- ☐ Removing and Installing, refer to ⇒ “4.2.2 Control Module and Hydraulic Unit, Removing”, page 38 .

3 - Brake Pad Wear Indicator Lamp - K32-

- ☐ Component location: Inside the instrument cluster.
- ☐ Function, refer to ⇒ “2.3 Level Control System Indicator Lamps”, page 21 .

4 - ABS Indicator Lamp - K47-

- ☐ Component location: Inside the instrument cluster.
- ☐ Function, refer to ⇒ “2.3 Level Control System Indicator Lamps”, page 21 .

5 - ASR/ESP Indicator Lamp - K155-

- ☐ Only on vehicles with ABS/EDL/ASR/ESP.
- ☐ Component location: Inside the instrument cluster.
- ☐ Function, refer to ⇒ “2.3 Level Control System Indicator Lamps”, page 21 .

6 - Brake System Warning Lamp - K118-

- ☐ Component location: Inside the instrument cluster

❑ Function, refer to ⇒ “2.3 Level Control System Indicator Lamps”, page 21

7 - Brake Lamp Switch - F-

❑ Includes Brake Pedal Switch - F47-

❑ Component location: On brake master cylinder.

❑ Removing and Installing, refer to ⇒ “5.5 Brake Lamp Switch F 07 November 2005”, page 138 .

8 - ASR/ESP Button - E256-

❑ Only on vehicles with ABS/EDL/ASR/ESP.

❑ Component location: Inside center console.

9 - Diagnostic Connection

❑ Component location: cover in driver footwell.

10 - Steering Angle Sensor - G85-

Note

From calendar week 22/2008, the steering angle sensor is located inside the steering gear on vehicles equipped with generation 3 electro-mechanical steering.

❑ Component location A: on the steering column between the steering wheel and the steering column switch.

❑ Removing and Installing, refer to ⇒ “4.8 Steering Angle Sensor G85 ”, page 48 .

❑ Component location B: inside the steering gear.

11 - Right Front ABS Wheel Speed Sensor - G45- / Left Front ABS Wheel Speed Sensor - G47-

❑ Removing and Installing, refer to ⇒ “2.7 ABS Components, Front Axle”, page 28 .

12 - Wheel Bearing/Hub Unit

❑ The ABS sensor ring is installed in the wheel bearing.

13 - Right Rear ABS Wheel Speed Sensor - G44- / Left Rear ABS Wheel Speed Sensor - G46-

Front wheel drive shown

❑ Removing and installing (Front Wheel Drive -FWD-), refer to ⇒ “2.8 ABS Components, Rear Axle, FWD”, page 29 .

❑ Installing and removing (all wheel drive), refer to ⇒ “2.9 ABS Components, Rear Axle, AWD”, page 30 .

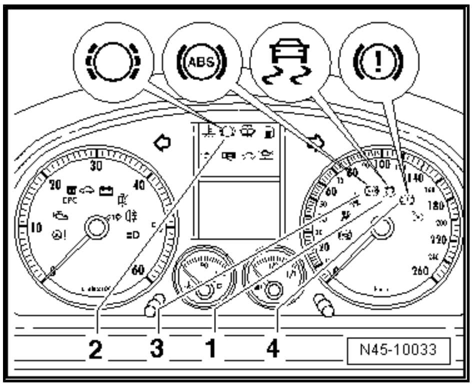
14 - Wheel Bearing/Hub Unit

Front wheel drive shown

❑ The ABS sensor ring is installed in the wheel bearing.

2.3 Level Control System Indicator Lamps

Warning lamps, Golf



Item	Designation
1	Traction Control Indicator Lamp - K86-
	ASR/ESP Indicator Lamp - K155-
2	Brake Pad Wear Indicator Lamp - K32-
3	ABS Indicator Lamp - K47-
4	Brake System Warning Lamp - K118-

Brake Pad Wear Indicator Lamp

- If brake pad wear indicator lamp -2- does not switch off 3 seconds after the ignition is switched on or if it lights up when vehicle is driven, it could be caused by the following malfunctions:

-a- Brake pads may be worn.

Check front and rear axle brake pads/linings. Replace worn brake pads/linings.

-b- There is a wiring malfunction. ⇒ Wiring diagrams, Troubleshooting & Component locations.

ABS Indicator Lamp

- If ABS indicator lamp -3- does not go out after the ignition is switched on and the test sequence is complete, it could be caused by the following errors:

-a- Voltage supply is under 10 volts.

-b- There is an ABS malfunction.

> ⚠ WARNING
>
> *The ABS system shuts off if there is malfunction -b- in the system, however the standard brake system remains fully functional.*

-c- There was a periodic wheel speed sensor malfunction since the last vehicle start.

If this is the case, the ABS warning lamp will go out automatically after vehicle is started again and a speed of 20 km/h has been exceeded.

-d- The connection from instrument cluster to ABS control module - J104- is interrupted. ⇒ Wiring diagrams, Troubleshooting & Component locations

-e- The instrument cluster is faulty.

ABS Indicator Lamp and Brake System Warning Lamp

- If ABS indicator lamp -3- goes out but brake system warning lamp -4- lights up, the malfunctions causes may be:

-a- parking brake is engaged.

-b- brake fluid level is too low (warning lamp blinks).

Three warning tones are audible after switching on the ignition.

-c- There is a malfunction in the wiring to brake system warning lamp . ⇒ Wiring diagrams, Troubleshooting & Component locations.

- If ABS indicator lamp -3- and brake system warning lamp -4- lights up, ABS system is malfunctioning. A change in braking behavior should be checked.

⚠ WARNING

After ABS indicator lamp and brake system warning lamp light up, rear wheels may lock prematurely when braking.

Traction Control Indicator Lamp

- If Traction Control Indicator Lamp -1- does not go out after the ignition is switched on and the test sequence is complete, malfunction causes may be:

There is a malfunction present which only affects the ASR. The ABS and EBD safety systems are still completely functional ⇒ DTC memory.

-a- Short to positive (+) in ASR/ESP button - E256- .

-b- a malfunction in activation of traction control indicator lamp ⇒ Wiring diagrams, Troubleshooting & Component locations

-c- ASR system was switched off by ASR/ESP button

Note

If traction control indicator lamp blinks while driving, ASR system is operating in regulated mode.

- If traction control indicator lamp -1- did not light up during self-test, the following malfunction is present:

-a- The traction control indicator lamp is faulty ⇒ perform an electrical test.

ASR/ESP Indicator Lamp

- If the ASR/ESP indicator lamp -1- does not turn off after the ignition is switched on and the test sequence is completed, the malfunction may be:

There is a malfunction present which only affects the ASR/ESP. The ABS/EDL and EBD safety systems are still completely functional ⇒ check DTC memory.

-a- Short circuit to B+ in ASR/ESP button .

-b- A malfunction in the actuation of ASR/ESP indicator lamp ⇒ Wiring diagrams, Troubleshooting & Component locations.

-c- ASR/ESP system was switched off by ASR/ESP button

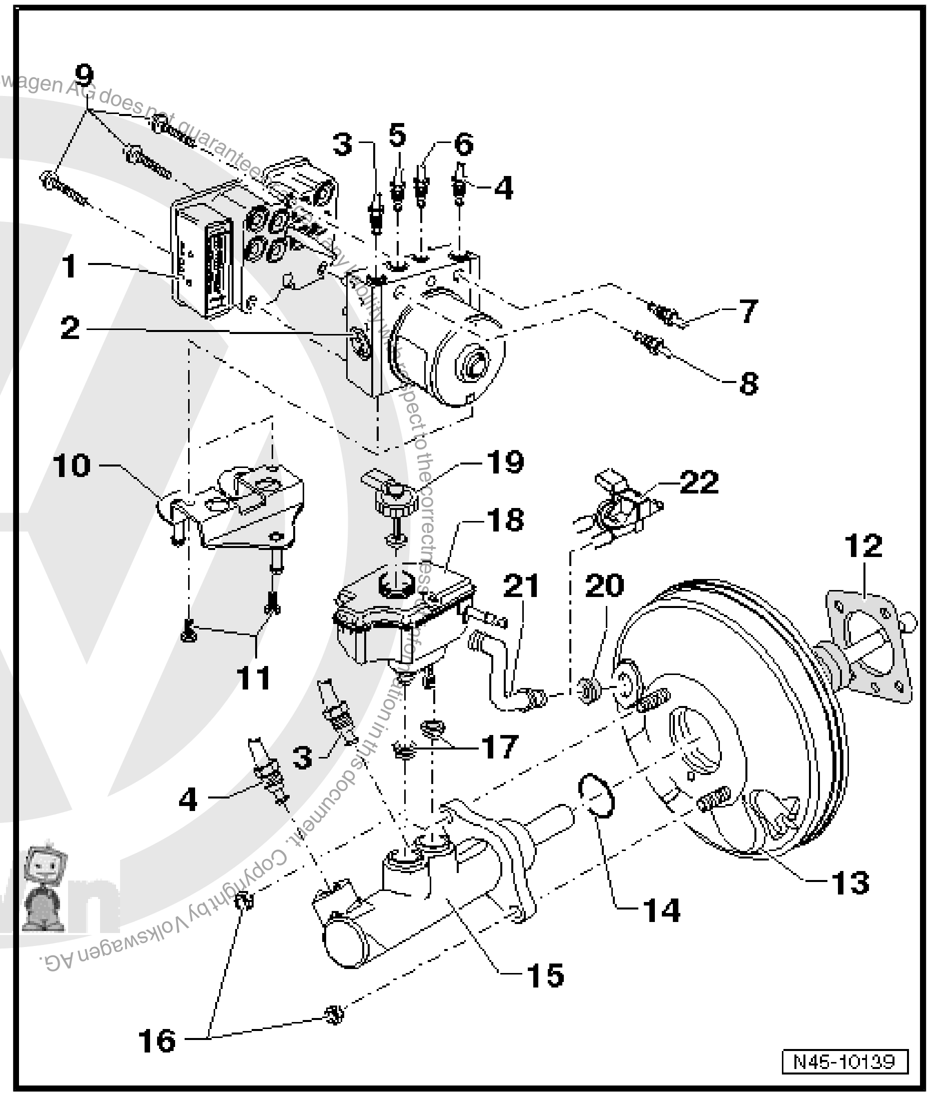
Note

If ASR/ESP indicator lamp flashes while driving, the ASR or ESP systems are regulating the system.

- If the ASR/ESP indicator lamp -1- did not light up during self-test, the following malfunction is present:

-a- the ASR/ESP indicator lamp is faulty ⇒ perform an electrical test.

2.4 ABS Mark 70 (ABS/ASR)



1 - ABS Control Module - J104-

☐ Removing and Installing, refer to ⇒ “4.1.2 Control Module and Hydraulic Unit, Removing”, page 33 .

2 - ABS Hydraulic Unit - N55-

☐ Removing and installing, refer to ⇒ “4.1.2 Control Module and Hydraulic Unit, Removing”, page 33 .

3 - Brake Line

☐ Master brake cylinder/ primary piston circuit to hydraulic control unit.

☐ Identification: Tube fitting with threads M 10 x 1.

4 - Brake Line

☐ Master brake cylinder/ secondary piston circuit to hydraulic unit.

☐ Identification: Tube fitting with threads M 12 x 1.

5 - Brake Line

☐ To left front brake caliper.

☐ Identification: Tube fitting with threads M 12 x 1.

6 - Brake Line

☐ To the right front brake caliper.

☐ Identification: Tube fitting with threads M 10 x 1.

7 - Brake Line

☐ To left rear brake caliper.

☐ Identification: Tube fitting with threads M 12 x 1.

8 - Brake Line

☐ To the right rear brake caliper.

☐ Identification: Tube fitting with threads M 10 x 1.

9 - Inner TORX® Bolt

☐ 5.5 Nm

☐ Use new bolts.

10 - Bracket

11 - Bolt

☐ 8 Nm

12 - Gasket

☐ For brake booster.

13 - Brake Booster

☐ On gasoline engines, vacuum is supplied from intake manifold.

☐ Functional check:

– With engine switched off, depress brake pedal firmly several times (to deplete vacuum in tool).

– Depress and hold brake pedal with average foot pressure and start engine. If brake booster is working properly, pedal will be felt to give noticeably under foot (booster assistance becomes effective).

❑ Replace as a unit in the event of malfunction (previously, check all vacuum lines).
❑ Removing and Installing, refer to ⇒ “5.7 Brake Booster”, page 139 .

14 - Seal

15 - Brake Master Cylinder

❑ Allocation, refer to the Parts Catalog.
❑ Cannot be serviced. Replace as complete unit if malfunctioning.
❑ Removing and Installing, refer to ⇒ “5.6 Master Brake Cylinder”, page 138 .

16 - Nut

❑ 25 Nm
❑ Always replace if removed.

17 - Sealing Plug

❑ Moisten with brake fluid and press into brake fluid reservoir.

18 - Brake Fluid Reservoir

19 - Cap

20 - Sealing Plug

❑ Connection for vacuum hose.

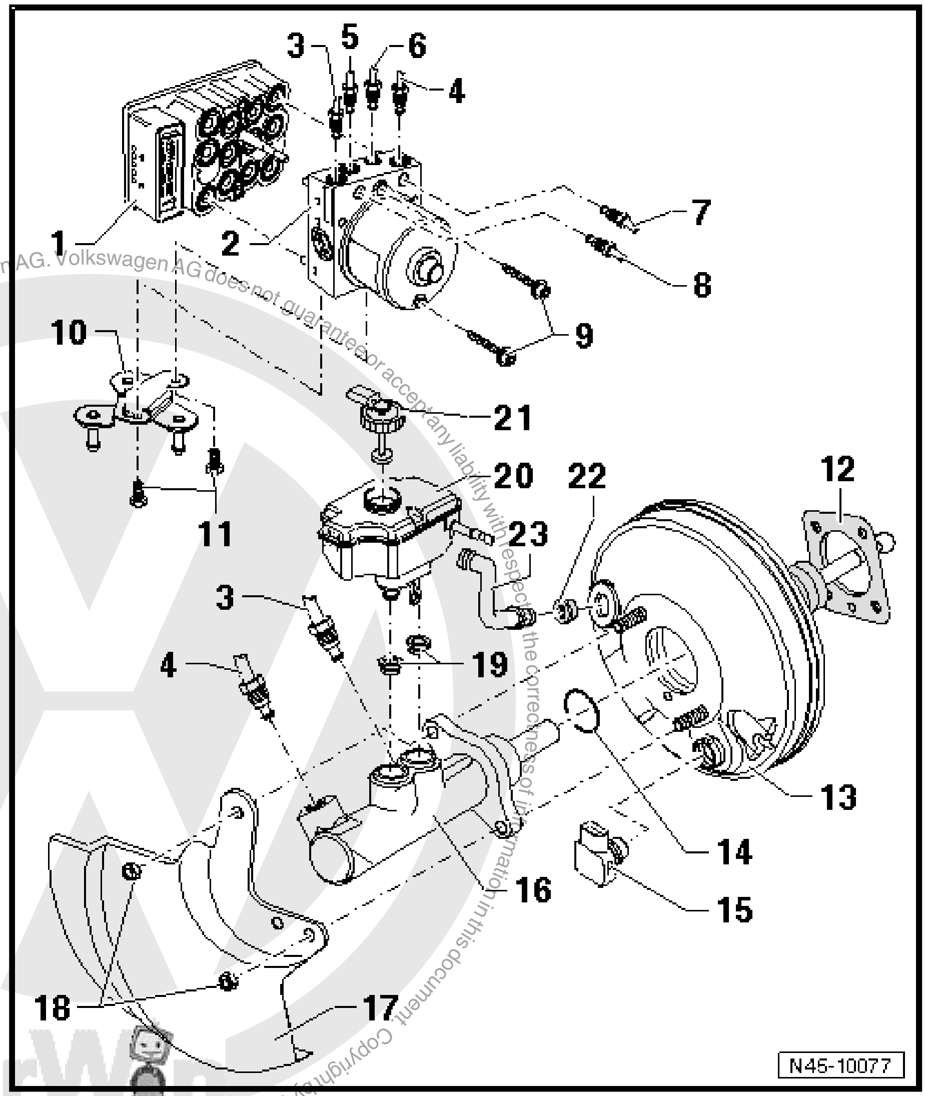
21 - Vacuum Hose

❑ Insert into brake booster.

22 - Brake Booster Pressure Sensor - G294-

❑ On vehicles with FSI engine without hydraulic brake vacuum booster
❑ Removing and installing, refer to ⇒ “5.4 Brake Booster Pressure Sensor G294 ”, page 137 .

2.5 ABS Mark 60, ABS, EDL, ASR and ESP, through Calendar Week 22.2008



1 - ABS Control Module - J104-

Separation from control module and hydraulic unit is not possible on vehicles with hydraulic brake booster or hill assist.

- ☐ Removing and Installing, refer to ⇒ “4.3.1 Brake Lines from Brake Master Cylinder, Connecting to Hydraulic Unit”, page 42 .

2 - ABS Hydraulic Unit - N55-

Separation from control module and hydraulic unit is not possible on vehicles with hydraulic brake booster or hill assist.

- ☐ Removing and Installing, refer to ⇒ “4.3.1 Brake Lines from Brake Master Cylinder, Connecting to Hydraulic Unit”, page 42 .

3 - Brake Line

- ☐ Master brake cylinder/ primary piston circuit to hydraulic control unit.
- ☐ Identification: ∅ 6.5 mm and tube fitting with M12 x 1 long thread.

4 - Brake Line

- ☐ Master brake cylinder/ secondary piston circuit to hydraulic unit.
- ☐ Identification: ∅ 6.5 mm and tube fitting with M12 x 1 long thread.

5 - Brake Line

- ☐ To left front brake caliper.
- ☐ Identification: 5.25 mm diameter and tube fitting with shorter thread M12 x 1.

6 - Brake Line

- ☐ To the right front brake caliper.
- ☐ Identification: 5.25 mm diameter and tube fitting with M10 x 1 thread.

7 - Brake Line

- ☐ To left rear brake caliper.
- ☐ Identification: 5.25 mm diameter and tube fitting with shorter thread M12 x 1.

8 - Brake Line

- ☐ To the right rear brake caliper.
- ☐ Identification: 5.25 mm diameter and tube fitting with M10 x 1 thread.

9 - Inner TORX® Bolt

- ☐ 5.5 Nm
- ☐ Use new bolts.

10 - Bracket

11 - Bolt

☐ 8 Nm

12 - Gasket

☐ For brake booster.

13 - Brake Booster

☐ On gasoline engines, vacuum is supplied from intake manifold.

☐ Some vehicles with a gasoline engine and automatic transmission are equipped with a vacuum pump for brakes, refer to ⇒ “5.3 Brake System Vacuum Pump V192 ”, page 137 .

☐ On vehicles with a hydraulic brake booster, a vacuum sensor is installed, refer to ⇒ “4.9 Brake Booster Vacuum Sensor G483 ”, page 48 .

☐ Functional check:

– With engine switched off, depress brake pedal firmly several times (to deplete vacuum in tool).

– Depress and hold brake pedal with average foot pressure and start engine. If brake booster is working properly, pedal will be felt to give noticeably under foot (booster assistance becomes effective).

☐ Replace as a unit in the event of malfunction (previously, check all vacuum lines).

☐ Removing and Installing, refer to ⇒ “5.7 Brake Booster”, page 139 .

14 - Seal

15 - Brake Booster Vacuum Sensor - G483-

☐ Only on vehicles with the hydraulic brake booster.

☐ Removing and Installing, refer to ⇒ “4.9 Brake Booster Vacuum Sensor G483 ”, page 48 .

16 - Brake Master Cylinder

☐ Allocation, refer to the Parts Catalog.

☐ Cannot be serviced. Replace as complete unit if malfunctioning.

☐ Removing and Installing, refer to ⇒ “5.6 Master Brake Cylinder”, page 138

17 - Heat Shield

18 - Nut

☐ 25 Nm

☐ Always replace if removed.

19 - Sealing Plug

☐ Moisten with brake fluid and press into brake fluid reservoir.

20 - Brake Fluid Reservoir

21 - Cap

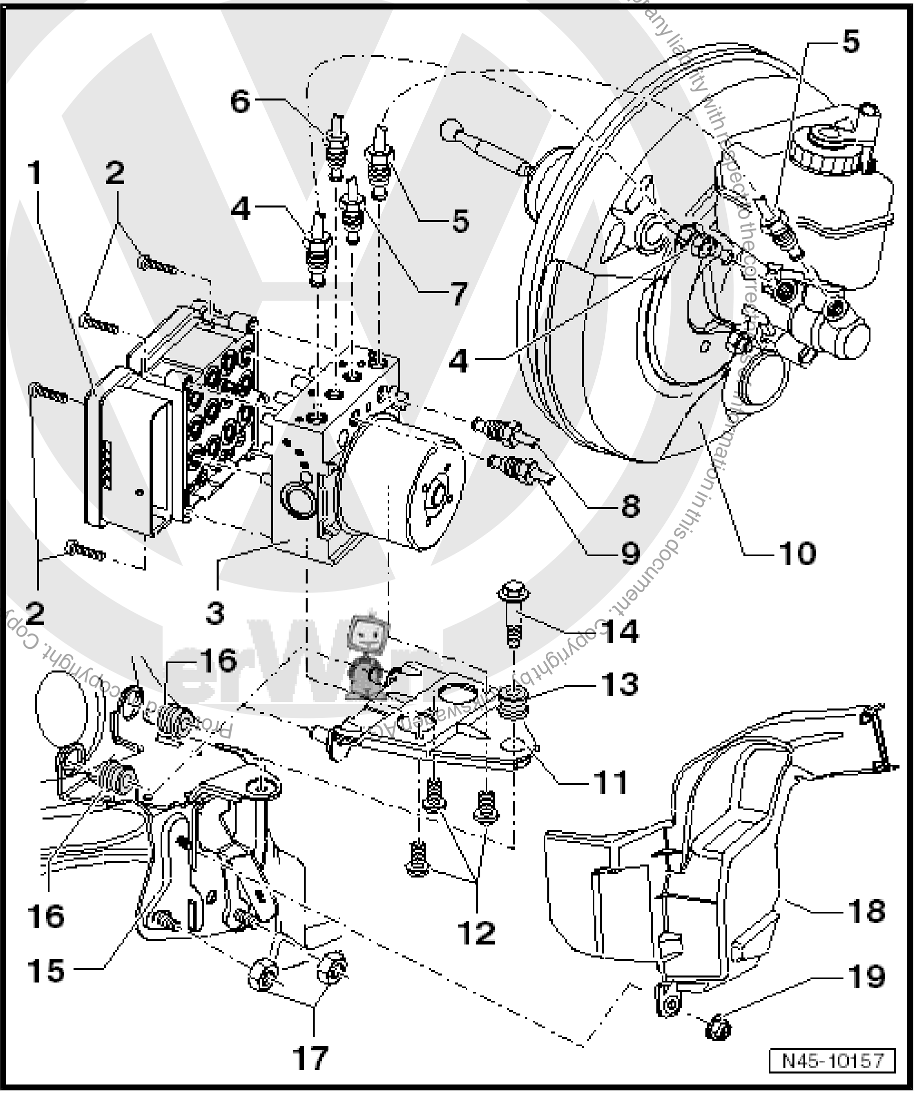
22 - Sealing Plug

☐ Connection for vacuum hose.

23 - Vacuum Hose

☐ Insert into brake booster.

2.6 ABS Mark 60, ABS, EDL, ASR and ESP, from Calendar Week 22.2008



1 - ABS Control Module - J104-

- ☐ Removing and Installing, refer to ⇒ “4.2.2 Control Module and Hydraulic Unit, Removing”, page 38 .

2 - Inner TORX® Bolt

- ☐ 2 Nm + 0.8 Nm
- ☐ Use new bolts.

3 - ABS Hydraulic Unit - N55-

- ☐ Removing and installing, refer to ⇒ “4.2.2 Control Module and Hydraulic Unit, Removing”, page 38 .

4 - Brake Line

- ☐ Master brake cylinder/ primary piston circuit to hydraulic control unit.
- ☐ Identification: 6.5 mm and tube fitting with M12 x 1 thread.

5 - Brake Line

- ☐ Master brake cylinder/ secondary piston circuit to hydraulic unit.
- ☐ Identification: 6.5 mm and tube fitting with M12 x 1 thread.

6 - Brake Line

- ☐ To left front brake caliper.
- ☐ Identification: 5.25 mm diameter and tube fitting with M10 x 1 thread.

7 - Brake Line

- ☐ To the right front brake caliper.
- ☐ Identification: 5.25 mm and tube fitting with M12 x 1 thread.

8 - Brake Line

- ☐ To left rear brake caliper.
- ☐ Identification: 5.25 mm and tube fitting with M12 x 1 thread.

9 - Brake Line

- ☐ To the right rear brake caliper.
- ☐ Identification: 5.25 mm diameter and tube fitting with M10 x 1 thread.

10 - Brake Booster

- ☐ Refer to ⇒ “2.3 Brake Booster and Master Cylinder Overview”, page 117 .
- ☐ Removing and Installing, refer to ⇒ “5.7 Brake Booster”, page 139 .

11 - Bracket

- ☐ After installing, make sure it fits properly.

12 - TORX® Bolt

- ❑ 8 Nm

13 - Rubber Insulation

14 - Hex Bolt

- ❑ 8 Nm

15 - Bracket

16 - Rubber Insulation

- ❑ When installing the mount, make sure the rubber insulation does not push out of the bracket.

17 - Nut

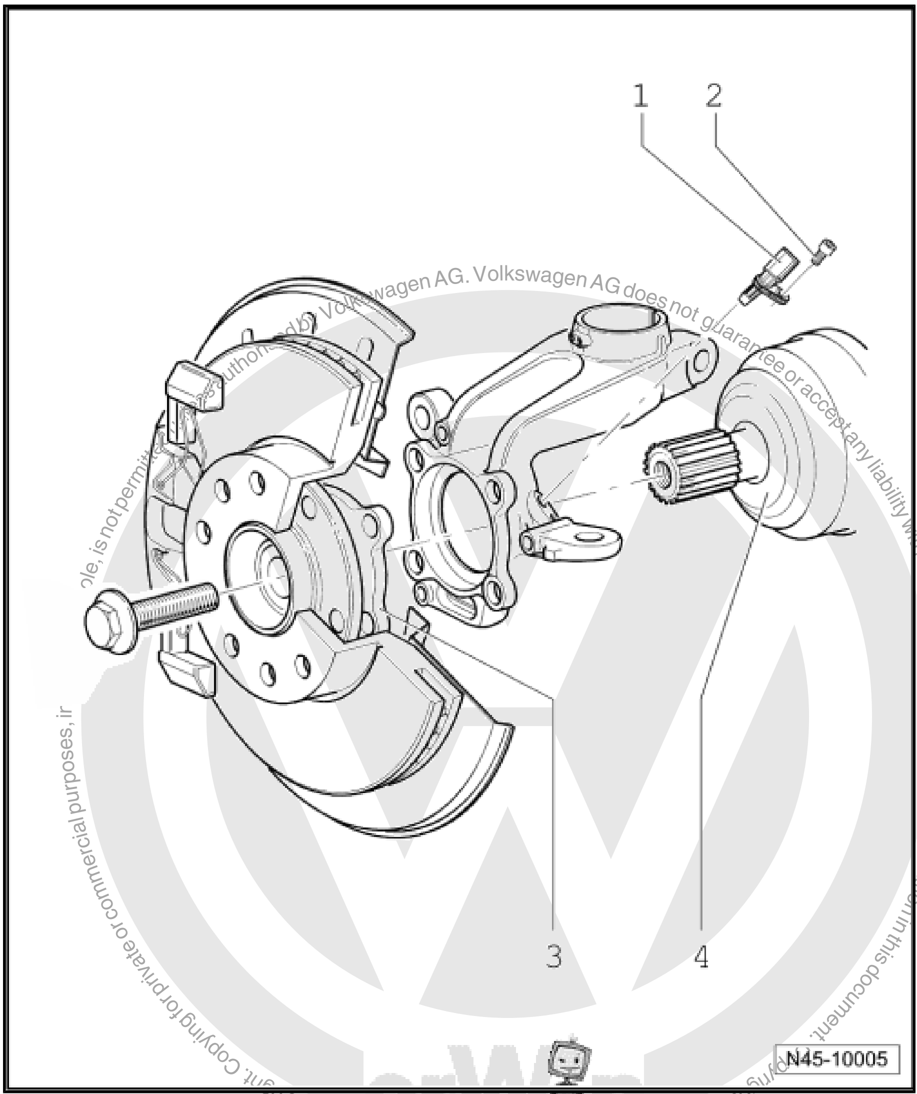
- ❑ 20 Nm

18 - Heat Shield

19 - Nut

- ❑ 8 Nm

2.7 ABS Components, Front Axle



1 - ABS Wheel Speed Sensor

- ❑ Before inserting sensor, clean inner surface of bore hole and coat with hot bolt paste G 052 112 A3.
- ❑ Removing and Installing, refer to ⇒ “4.4 Speed Sensor, Front Axle”, page 46 .

2 - Hex Socket Head Bolt

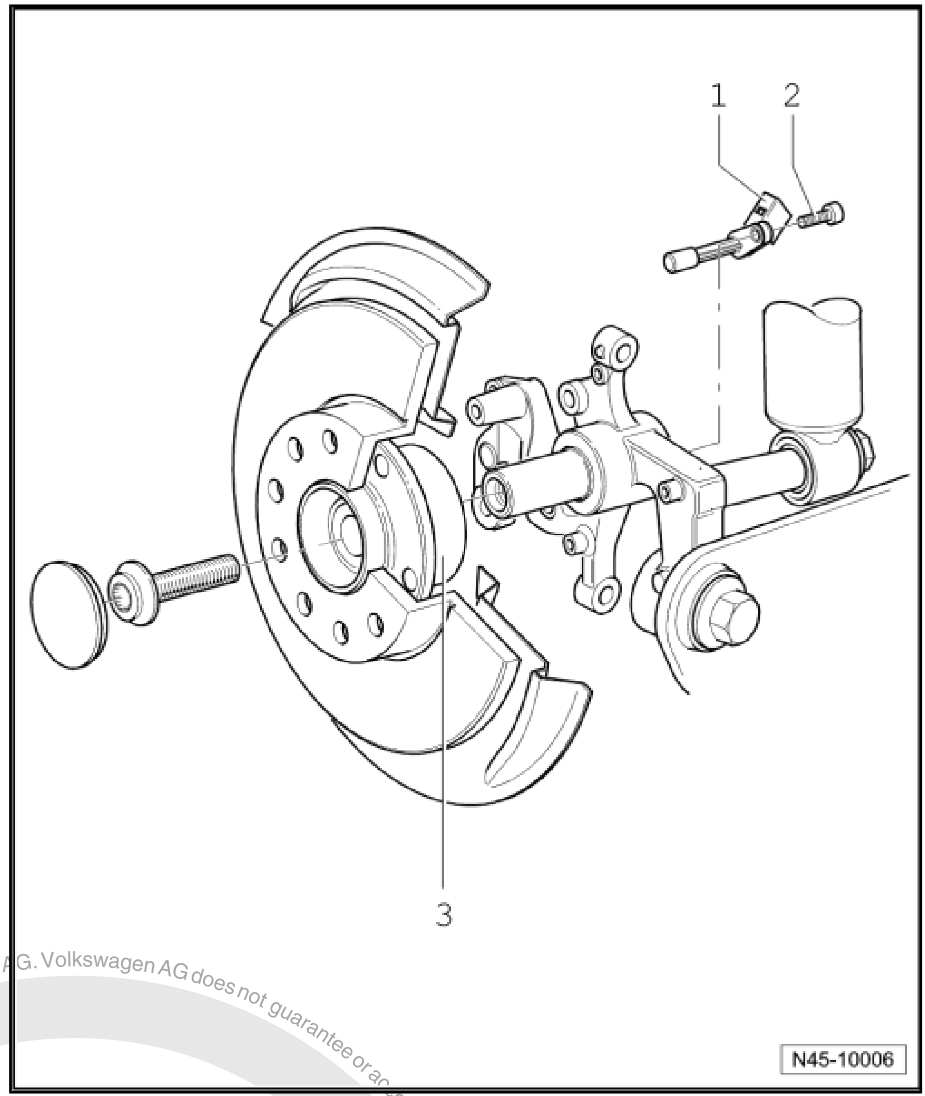
- ❑ 8 Nm

3 - Wheel Bearing/Hub Unit

- ❑ The ABS sensor ring is installed in the wheel bearing

4 - Drive Axle

2.8 ABS Components, Rear Axle, FWD



1 - ABS Wheel Speed Sensor

- ❑ Before inserting sensor, clean inner surface of bore hole and coat with hot bolt paste G 052 112 A3.
- ❑ Removing and Installing, refer to ⇒ “4.6 Speed Sensor, Rear Axle, FWD”, page 46 .

2 - Hex Socket Head Bolt

- ❑ 8 Nm

3 - Wheel Bearing/Hub Unit

- ❑ The ABS sensor ring is installed in the wheel bearing.

2.9 ABS Components, Rear Axle, AWD

1 - ABS Wheel Speed Sensor

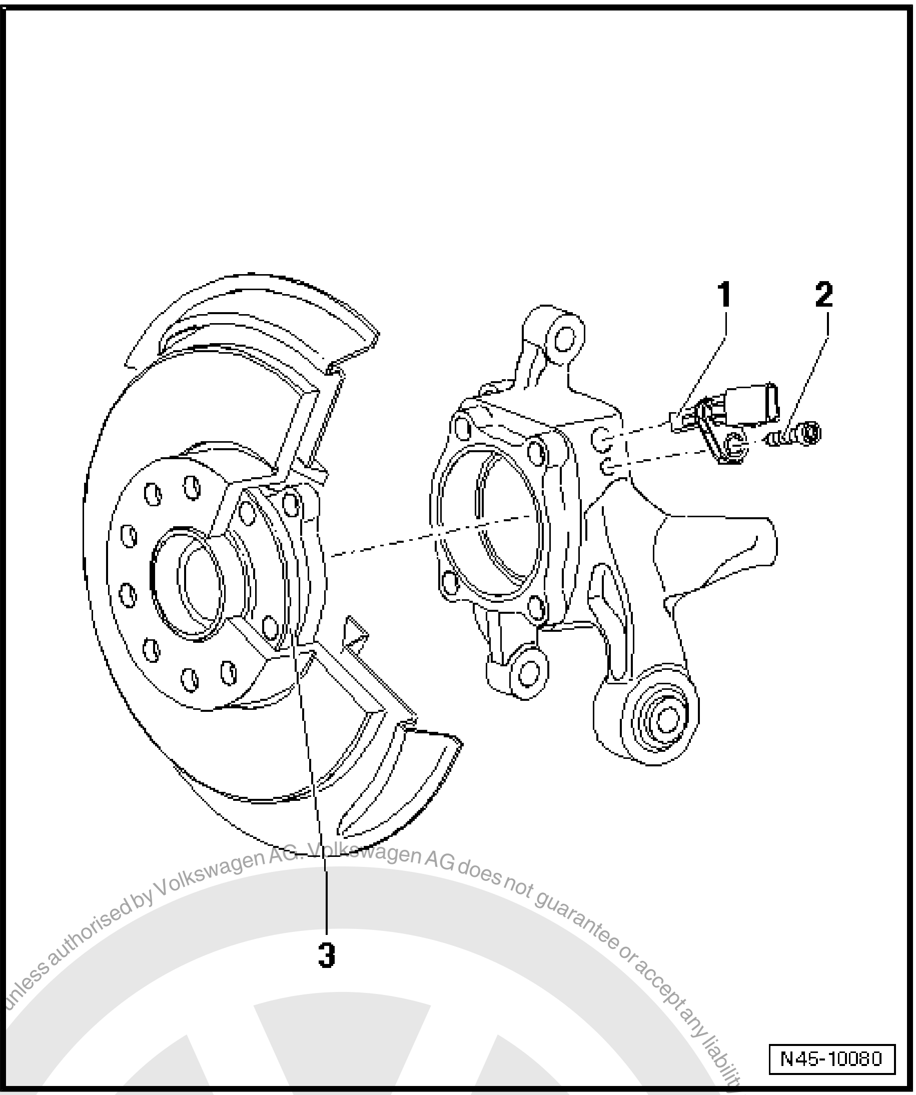
- ❏ Before inserting sensor, clean inner surface of bore hole and coat with hot bolt paste G 052 112 A3.
- ❏ Removing and installing, refer to ⇒ “4.5 Speed Sensor, Rear Axle, AWD”, page 46 .

2 - Hex Socket Head Bolt,

- ❏ 8 Nm

3 - Wheel Bearing/Hub Unit

- ❏ The ABS sensor ring is installed in the wheel bearing.



3 Specifications

⇒ “3.1 Fastener Tightening Specifications”, page 31

3.1 Fastener Tightening Specifications

Component	Bolt Size	Nm
ABS control module[1]	-	5.5
ABS control module (ABS Mark 60, from calendar week 22.2008)[1]	-	2 + 0.8
ABS wheel speed sensor	-	8
Bracket for ABS hydraulic unit	-	8
Bracket for heat shield (ABS Mark 60, from calendar week 22.2008)	-	20
Brake master cylinder, nut[1]	-	25
Heat shield[1]	-	25
Heat shield (ABS Mark 60, from calendar week 22.2008)	-	8

- [1] Always replace

ABS Mark 70 (ABS/ASR)

Tightening Specifications:	
Control module to ABS hydraulic unit ♦ Use new bolts!	5.5 Nm
Hydraulic unit hex bolt to bracket	8 Nm
Brake lines at ABS aggregate:	
Thread M 10 x 1	14 Nm
Thread M 12 x 1	14 Nm

ABS Mark 60, ABS, EDL, ASR and ESP, through Calendar Week 22.2008

Tightening Specifications:	
Control module to ABS hydraulic unit ♦ Use new bolts!	5.5 Nm
Hydraulic unit hex bolt to bracket	8 Nm
Brake lines at ABS aggregate:	
Thread M 10 x 1	14 Nm
Thread M 12 x 1	14 Nm

ABS Mark 60, ABS, EDL, ASR and ESP, from Calendar Week 22.2008

Tightening Specifications:	
Control module to ABS hydraulic unit ♦ Use new bolts!	2 Nm + 0.8 Nm
TORX® bolt for the hydraulic unit to the retainer	8 Nm
Hex bolt, retainer to bracket	8 Nm
Brake lines at ABS aggregate:	
Thread M 10 x 1	14 Nm
Thread M 12 x 1	14 Nm

4 Removal and Installation

⇒ “4.1 ABS Mark 70 (ABS/ASR)”, page 32

⇒ “4.2 ABS Mark 60 (ABS, EDL, ASR and ESP), from Calendar Week 22.2008”, page 37

⇒ “4.3 ABS Mark 60 (ABS, EDL, ASR and ESP), through Calendar Week 22.2008”, page 42

⇒ “4.4 Speed Sensor, Front Axle”, page 46

⇒ “4.5 Speed Sensor, Rear Axle, AWD”, page 46

⇒ “4.6 Speed Sensor, Rear Axle, FWD”, page 46

⇒ “4.7 ESP Sensor Unit G419 ”, page 47

⇒ “4.8 Steering Angle Sensor G85 ”, page 48

⇒ “4.9 Brake Booster Vacuum Sensor G483 ”, page 48

4.1 ABS Mark 70 (ABS/ASR)

⇒ “4.1.1 Brake Lines from Master Cylinder, Connecting to Hydraulic Unit”, page 32

⇒ “4.1.2 Control Module and Hydraulic Unit, Removing”, page 33

4.1.1 Brake Lines from Master Cylinder, Connecting to Hydraulic Unit

On the Brake Master Cylinder:

A - Primary piston circuit of master brake cylinder to hydraulic unit.

- Identification: Tube fitting with threads M 10 x 1.

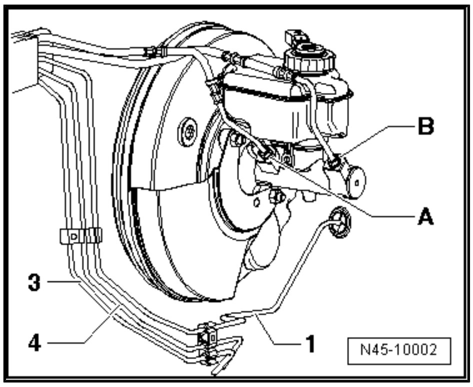
B - Secondary piston circuit of master brake cylinder to hydraulic unit.

- Identification: Tube fitting with threads M 12 x 1.

1 - Hydraulic unit to front left brake caliper.

3 - Hydraulic control unit to rear right brake caliper.

4 - Hydraulic control unit to rear left brake caliper.



On Hydraulic Unit

A - Hydraulic unit to primary piston circuit of master brake cylinder.

- Identification: Tube fitting with threads M 10 x 1.

B - Hydraulic unit to master cylinder secondary piston circuit.

- Identification: Tube fitting with threads M 12 x 1.

1 - Hydraulic unit to front left brake caliper.

- Identification: Tube fitting with threads M 12 x 1.

2 - Hydraulic unit to right front brake caliper.

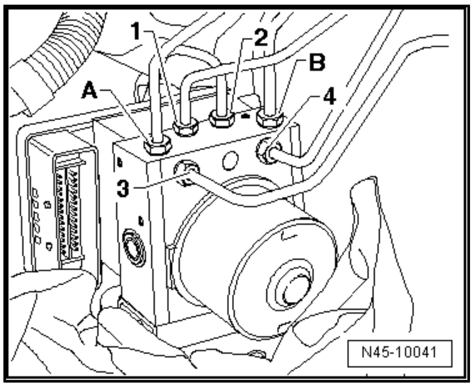
- Identification: Tube fitting with threads M 10 x 1.

3 - Hydraulic control unit to rear right brake caliper.

- Identification: Tube fitting with threads M 10 x 1.

4 - Hydraulic control unit to rear left brake caliper.

- Identification: Tube fitting with threads M 12 x 1

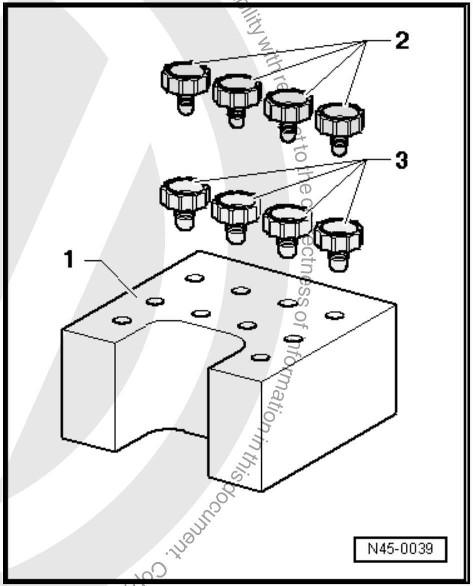


4.1.2 Control Module and Hydraulic Unit, Removing

Special tools and workshop equipment required

- Torque Wrench 5-50 Nm - V.A.G 1331-
- Torque Wrench - V.A.G 1410-
- Brake Pedal Actuator - V.A.G 1869/2-

Sealing Plug Repair Set, part no. 1H0 698 311 A



After separating the control module from the hydraulic unit, always install transport protection on the hydraulic unit for the valve domes.

Warranties will not be granted for hydraulic units without transport protection.

1 - Transport protection for valve domes (foam)

2 - Sealing Plug M 10

3 - Sealing Plug M 12

Removing

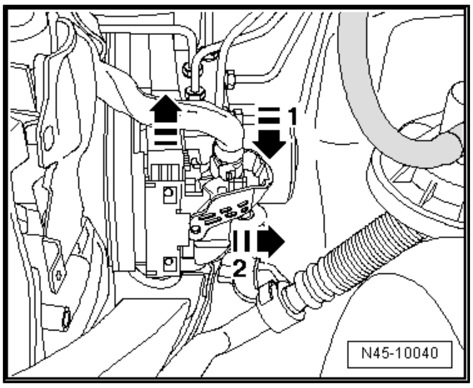
Component location:

The control module is bolted to the hydraulic unit and is located at right in the engine compartment.

> ⚠ WARNING
>
> *Do not bend the brake lines near the hydraulic unit.*

- Read and note the present control module coding.
- Note or request radio code on vehicles with coded radio if necessary.
- Disconnect battery, refer to ⇒ Electrical Equipment; Rep. Gr. 27 ; Removal and Installation .
- Remove engine cover.

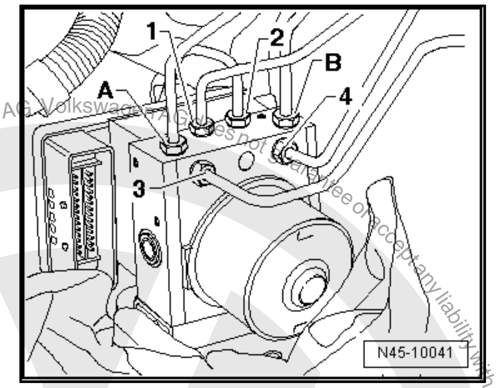
All Vehicles



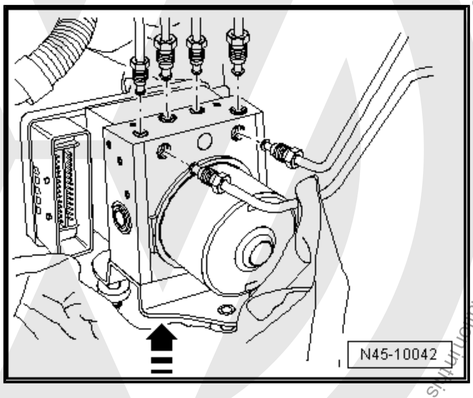
- Release control module connector in direction of arrow -1- and pull off -2-.
- Insert brake pedal actuator - V.A.G 1869/2- .
- Attach bleeder hose of bleeder bottles to left-front and left-rear brake caliper bleeder valves and open bleeder valves.
- Operate brake pedal using brake pedal depressor - V.A.G 1869/2- at least 60mm.
- Close left front and left rear bleeder valves.
- Do not remove brake pedal loading device - V.A.G 1869/2- .
- Place sufficient lint-free cloths under the control module and hydraulic unit.

Note

Make sure that brake fluid does not come in contact with the terminals.



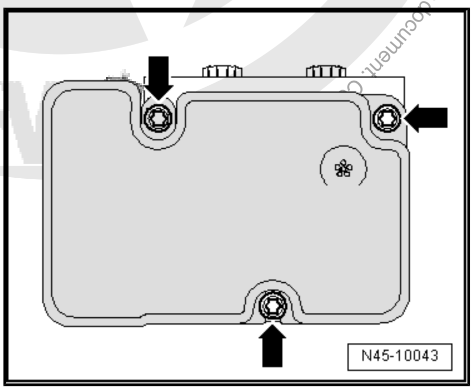
- First, mark both brake lines from master cylinder -A and B- and remove from the hydraulic unit.
- Plug the brake lines and threaded holes immediately with sealing plugs from the repair kit Part No. 1H0 698 311 A.
- Mark brake lines (brake caliper) -1 to 4-, unscrew and seal.



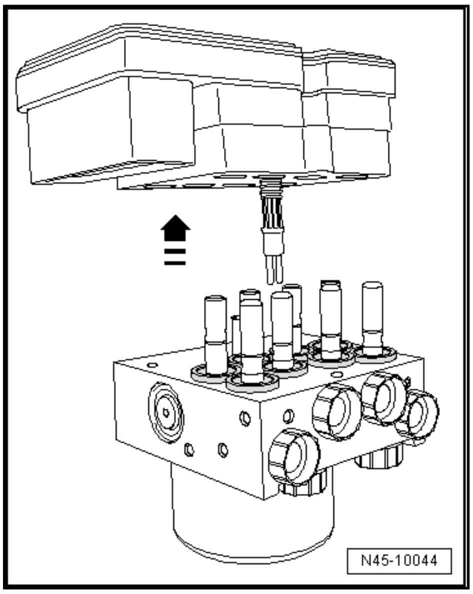
- Pull hydraulic unit with control module upward out of shock absorbers.

Control Module, Removing from Hydraulic Unit

- Set hydraulic unit with control module upward onto a clean, level surface.



- Remove inner TORX® bolts -arrows-.



- Pull control module off from hydraulic unit -arrow- without angling.
- Carefully pull off all sealing rings from valve domes of hydraulic unit.

> ⚠ WARNING
>
> - ♦ *On a disconnected control module, circuit board is laid open.*
> - ♦ *No moisture or particles of dirt must penetrate in interior of control module.*
> - ♦ *The hydraulic pump must not be separated from the hydraulic unit.*
> - ♦ *Avoid build-up of static electricity!*

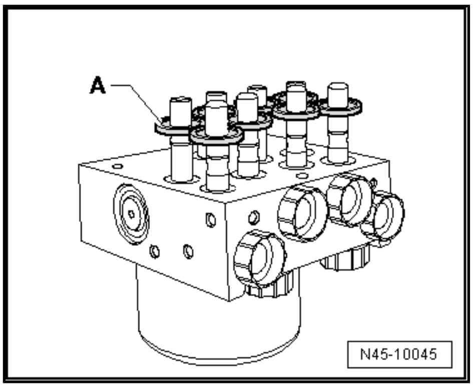
- Cover control module magnetic coils with a lint free cloth.

After separating the control module and hydraulic unit, use transport protection for valve body.

New Control Module, Installing

> ⚠ WARNING
>
> *Excessive shaking (for example dropping, impact) may destroy the control module. Control module must then no longer be used.*

- Surface must be cleaned before assembling.



– Slide all sealing rings -A- slightly over the valve dome.

– Place control module without canting it onto hydraulic unit.

Sealing rings are then brought into their end position.

– Bolt hydraulic unit and control module with new inner TORX® bolts supplied.

Note

- *A new control module may be installed a max. of two times to a used hydraulic unit, to ensure that the elastic gasket seals sufficiently.*
- *Do not install a used control module.*

Control Module and Hydraulic Unit, Installing

Note

- *Do not remove sealing plugs at new hydraulic unit until the corresponding brake line is about to be installed.*
- *If the sealing plugs are removed too early, brake fluid can escape. If this occurs, unit may not be sufficiently filled or adequately bled.*
- *When installing, make sure that rubber installation pieces are not pressed out of console.*

– Install in reverse order of removal.

– Remove brake pedal loading device - V.A.G 1869/2- .

– Bleed brake system, refer to ⇒ “1.1 Brake System, Bleeding”, page 107

– Enter radio code.

– Code the ABS Control Module -J104- with the vehicle diagnostic tester in "Guided Fault Finding".

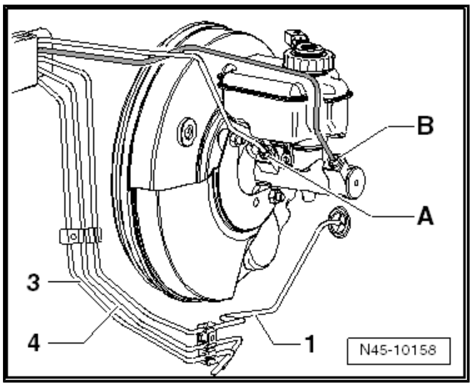
Tightening Specifications:	
Control module to ABS hydraulic unit ♦ Use new bolts!	5.5 Nm
Hydraulic unit hex bolt to bracket	8 Nm
Brake lines at ABS aggregate:	
Thread M 10 x 1	14 Nm
Thread M 12 x 1	14 Nm

4.2 ABS Mark 60 (ABS, EDL, ASR and ESP), from Calendar Week 22.2008

⇒ “4.2.1 Brake Lines from Brake Master Cylinder, Connecting to Hydraulic Unit”, page 37

⇒ “4.2.2 Control Module and Hydraulic Unit, Removing”, page 38

4.2.1 Brake Lines from Brake Master Cylinder, Connecting to Hydraulic Unit



On the Brake Master Cylinder

A - Primary piston circuit of master brake cylinder to hydraulic unit

- Identification: 6.5 mm and tube fitting with M12 x 1 thread

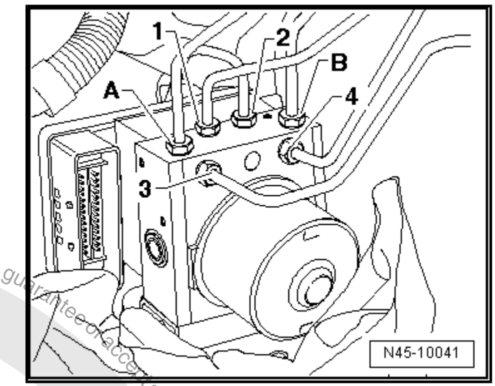
B - Secondary piston circuit of master brake cylinder to hydraulic unit

- Identification: 6.5 mm and tube fitting with M12 x 1 thread

1 - Hydraulic unit to front left brake caliper

3 - Hydraulic control unit to rear right brake caliper

4 - Hydraulic control unit to rear left brake caliper



On Hydraulic Unit:

A - Hydraulic unit to primary piston circuit of master brake cylinder

- Identification: 6.5 mm and tube fitting with M12 x 1 thread

B - Hydraulic unit to master cylinder secondary piston circuit

- Identification: 6.5 mm and tube fitting with M12 x 1 thread

1 - Hydraulic unit to front left brake caliper

- Identification: 5.25 mm diameter and tube fitting with M10 x 1 thread

2 - Hydraulic unit to right front brake caliper

- Identification: 5.25 mm and tube fitting with M12 x 1 thread

3 - Hydraulic control unit to rear right brake caliper

- Identification: 5.25 mm diameter and tube fitting with M10 x 1 thread

4 - Hydraulic control unit to rear left brake caliper

- Identification: 5.25 mm and tube fitting with M12 x 1 thread

4.2.2 Control Module and Hydraulic Unit, Removing

Special tools and workshop equipment required

- Torque Wrench 5-50 Nm - V.A.G 1331-
- Torque Wrench - V.A.G 1410-
- Brake Pedal Actuator - V.A.G 1869/2-

Sealing Plug Repair Set, part no. 1H0 698 311 A

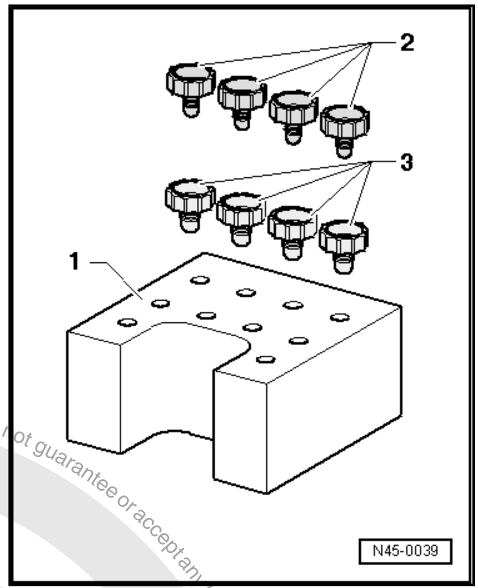
After separating the control module from the hydraulic unit, always install transport protection on the hydraulic unit for the valve domes.

Warranties will not be granted for hydraulic units without transport protection.

1 - Transport protection for valve domes (foam)

2 - Sealing Plug M 10

3 - Sealing Plug M 12



Removing

Component location:

The control module is bolted to the hydraulic unit and is located at right in the engine compartment.

⚠ WARNING

Do not bend the brake lines near the hydraulic unit.

– Read and note the present control module coding.

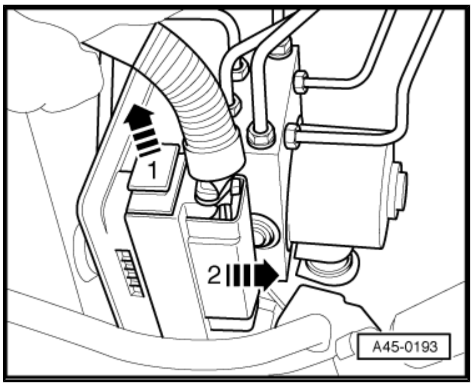
– Note or request radio code on vehicles with coded radio if necessary.

– Disconnect battery, refer to ⇒ Electrical Equipment; Rep. Gr. 27 ; Removal and Installation .

– Remove engine cover.

All Vehicles

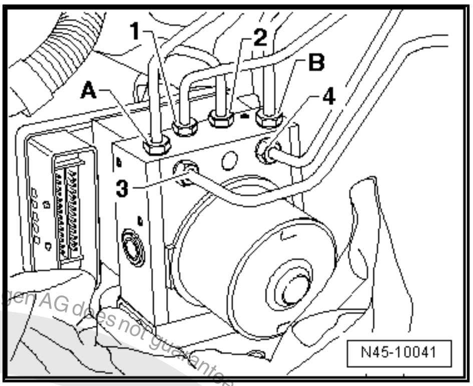
– If equipped, remove the heat shield.



- Release control module connector in direction of arrow -1- and pull off -2-.
- Insert -V.A.G 1869/2- .
- Attach bleeder hose of bleeder bottles to left-front and left-rear brake caliper bleeder valves and open bleeder valves.
- Operate brake pedal using -V.A.G 1869/2- at least 60 mm.
- Close left front and left rear bleeder valves.
- Do not remove -V.A.G 1869/2- .
- Place sufficient lint-free cloths under the control module and hydraulic unit.

Note

Make sure that brake fluid does not come in contact with the terminals.



- First, mark both brake lines from master cylinder -A and B- and remove from the hydraulic unit.
- Plug the brake lines and threaded holes immediately with sealing plugs from the repair kit Part No. 1H0 698 311 A.
- Mark brake lines (brake caliper) -1 to 4-, unscrew and seal.
- Remove the hex bolt from the bracket.
- Remove the hydraulic unit, the control module and the retainer from the bracket rubber insulation and turn it on its head.
- Remove the retainer from the hydraulic unit in the engine compartment.
- Remove the hydraulic unit and the control module.

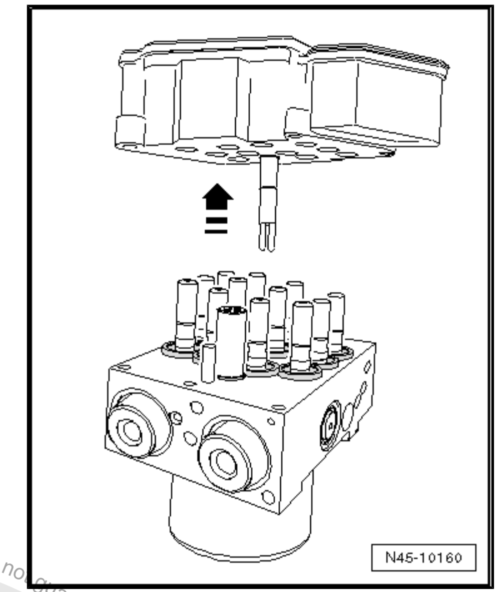
Control Module, Removing from Hydraulic Unit

Note

- Set hydraulic unit with control module upward onto a clean, level surface.
- Remove the inner TORX® bolt from the control module.

– Pull control module off from hydraulic unit -arrow- without angling.

– Carefully pull off all sealing rings from valve domes of hydraulic unit.



WARNING

- ♦ *On a disconnected control module, circuit board is laid open.*
- ♦ *No moisture or particles of dirt must penetrate in interior of control module.*
- ♦ *Avoid build-up of static electricity!*

– Cover control module magnetic coils with a lint free cloth.

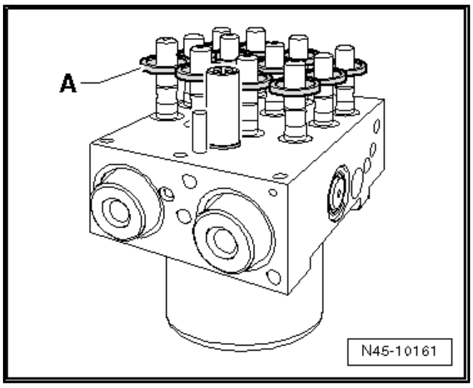
After separating the control module and hydraulic unit, use transport protection for valve body.

New Control Module, Installing

WARNING

Excessive shaking (for example dropping, impact) may destroy the control module. Control module must then no longer be used.

- Surface must be cleaned before assembling.



- Slide all sealing rings -A- slightly over the valve dome.
- Place control module without canting it onto hydraulic unit.

Sealing rings are then brought into their end position.

- Install the hydraulic unit and control module with the new inner TORX® bolts diagonally according to the tightening specification.

Note

- ♦ *A new control module may be installed a max. of two times to a used hydraulic unit, to ensure that the elastic gasket seals sufficiently.*
- ♦ *Do not install a used control module.*

Control Module and Hydraulic Unit, Installing

Note

- ♦ *Do not remove sealing plugs at new hydraulic unit until the corresponding brake line is about to be installed.*
- ♦ *If the sealing plugs are removed too early, brake fluid can escape. If this occurs, unit may not be sufficiently filled or adequately bled.*

- Install in reverse order of removal.

WARNING

When installing the mount, make sure the rubber insulation does not push out of the bracket. After installing, make sure the hydraulic unit and the control module are secure, otherwise malfunctions will register.

- Remove -V.A.G 1869/2- .
- Bleed brake system, refer to ⇒ page 107
- Enter radio code.
- Code the ABS Control Module -J104- with the ⇒ Vehicle diagnostic tester in "Guided Fault Finding".

A Steering Angle Sensor - G85- , Transverse Acceleration Sensor - G200- and Brake Pressure Sensor 1 - G201- basic setting must be done.

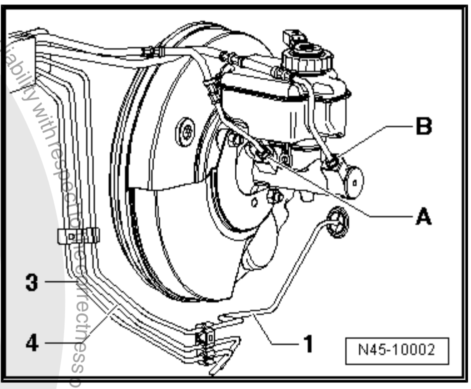
Tightening Specifications:	
Control module to ABS hydraulic unit ♦ Use new bolts!	2 Nm + 0.8 Nm
TORX® bolt for the hydraulic unit to the retainer	8 Nm
Hex bolt, retainer to bracket	8 Nm
Brake lines at ABS aggregate:	
Thread M 10 x 1	14 Nm
Thread M 12 x 1	14 Nm

4.3 ABS Mark 60 (ABS, EDL, ASR and ESP), through Calendar Week 22.2008

⇒ “4.3.1 Brake Lines from Brake Master Cylinder, Connecting to Hydraulic Unit”, page 42

⇒ “4.3.2 Control Module and Hydraulic Unit, Removing”, page 43

4.3.1 Brake Lines from Brake Master Cylinder, Connecting to Hydraulic Unit



On the Brake Master Cylinder

A - Primary piston circuit of master brake cylinder to hydraulic unit

- Identification: 6.5 mm and tube fitting with M12 x 1 thread

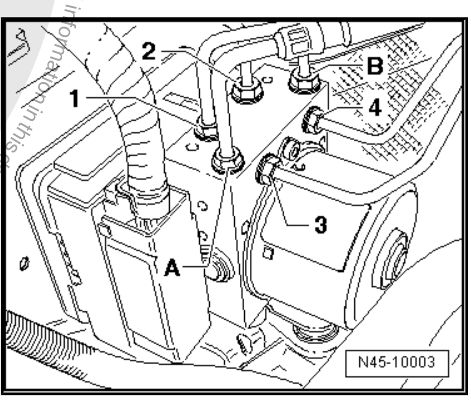
B - Secondary piston circuit of master brake cylinder to hydraulic unit

- Identification: 6.5 mm and tube fitting with M12 x 1 thread

1 - Hydraulic unit to front left brake caliper

3 - Hydraulic control unit to rear right brake caliper

4 - Hydraulic control unit to rear left brake caliper



On Hydraulic Unit:

A - Hydraulic unit to primary piston circuit of master brake cylinder

- Identification: ∅ 6.5 mm and tube fitting with M12 x 1 long thread

B - Hydraulic unit to master cylinder secondary piston circuit

- Identification: ∅ 6.5 mm and tube fitting with M12 x 1 long thread

1 - Hydraulic unit to front left brake caliper

- Identification: 5.25 mm diameter and tube fitting with shorter thread M12 x 1

2 - Hydraulic unit to right front brake caliper

- Identification: 5.25 mm diameter and tube fitting with M10 x 1 thread

3 - Hydraulic control unit to rear right brake caliper

- Identification: 5.25 mm diameter and tube fitting with M10 x 1 thread

4 - Hydraulic control unit to rear left brake caliper

- Identification: 5.25 mm diameter and tube fitting with shorter thread M12 x 1

4.3.2 Control Module and Hydraulic Unit, Removing

Special tools and workshop equipment required

- ♦ Torque Wrench 5-50 Nm - V.A.G 1331-
- ♦ Torque Wrench - V.A.G 1410-
- ♦ Brake Pedal Actuator - V.A.G 1869/2-

Sealing Plug Repair Set, part no. 1H0 698 311 A

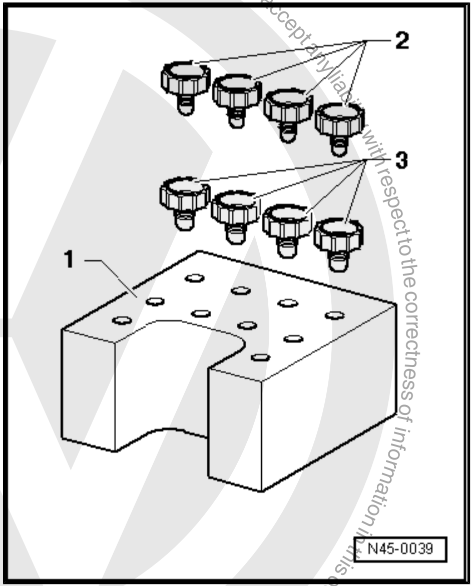
After separating the control module from the hydraulic unit, always install transport protection on the hydraulic unit for the valve domes.

Warranties will not be granted for hydraulic units without transport protection.

1 - Transport protection for valve domes (foam)

2 - Sealing Plug M 10

3 - Sealing Plug M 12



Removing

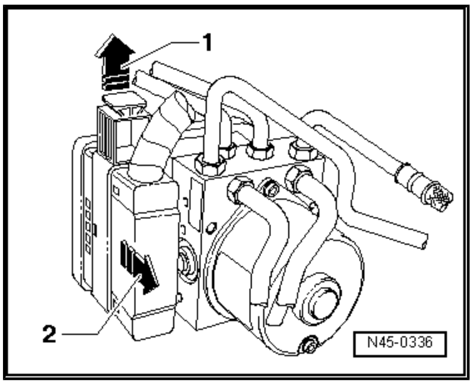
Component location:

The control module is bolted to the hydraulic unit and is located at right in the engine compartment.

> ⚠ **WARNING**
>
> *Do not bend the brake lines near the hydraulic unit.*

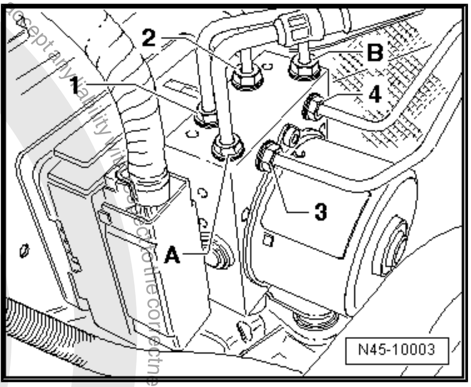
- – Read and note the present control module coding.
- – Note or request radio code on vehicles with coded radio if necessary.
- – Disconnect battery, refer to ⇒ Electrical Equipment; Rep. Gr. 27 ; Removal and Installation .
- – Remove engine cover.

- – Release control module connector in direction of arrow -1- and pull off -2-.
- – Insert -V.A.G 1869/2- .
- – Attach bleeder hose of bleeder bottles to left-front and left-rear brake caliper bleeder valves and open bleeder valves.
- – Operate brake pedal using -V.A.G 1869/2- at least 60 mm.
- – Close left front and left rear bleeder valves.
- – Do not remove -V.A.G 1869/2- .
- – Place sufficient lint-free cloths under the control module and hydraulic unit.



Note

Make sure that brake fluid does not come in contact with the terminals.



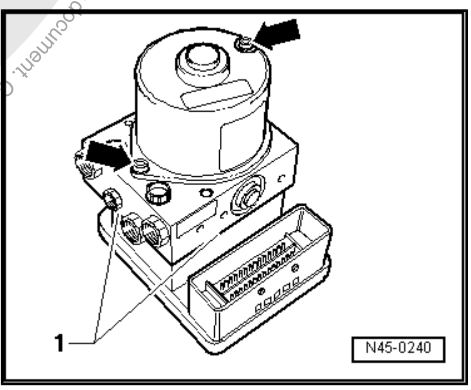
- First, mark both brake lines from master cylinder -A and B- and remove from the hydraulic unit.
- Plug the brake lines and threaded holes immediately with sealing plugs from the repair kit Part No. 1H0 698 311 A.
- Mark brake lines (brake caliper) -1 to 4-, unscrew and seal.
- Pull hydraulic unit with control module upward out of shock absorbers.

Control Module, Removing from Hydraulic Unit

Note

Separation from control module and hydraulic unit is not possible on vehicles with hydraulic brake booster or hill assist.

- Set hydraulic unit with control module downward onto a clean, level surface.

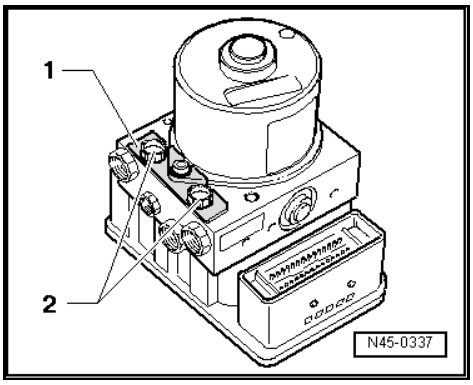


- Remove the inside E5 TORX® bolts -arrows- from the hydraulic pump.

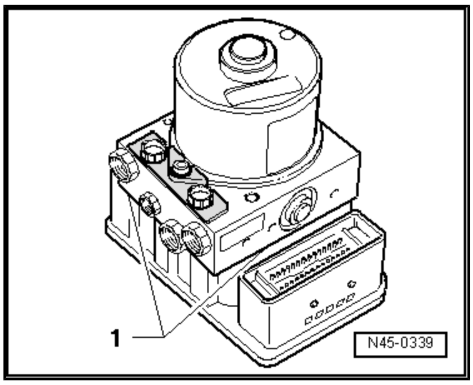
WARNING

The hydraulic pump must not be separated from the hydraulic unit.

Avoid build-up of static electricity!

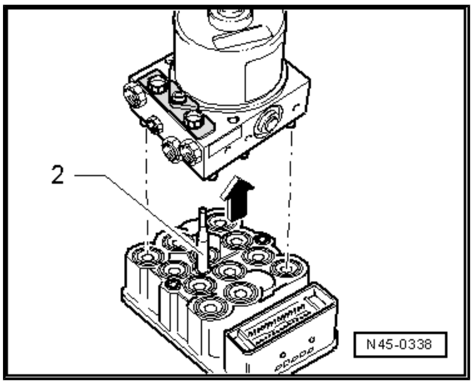


- For this reason, secure hydraulic pump to hydraulic unit using red retainer -1- from replacement part set and two sealing plugs -2-.



- Carefully disconnect hydraulic unit with hydraulic pump upward at interface -1- from control module.

When removing control module, be sure that the valve domes of the hydraulic unit do not jam or get bent in the magnetic coils of the control module.



Item 2 pump motor adapter.

- Cover control module magnetic coils with a lint free cloth.

After separating the control module and hydraulic unit, use transport protection for valve body.

New Control Module, Installing

WARNING

Excessive shaking (for example dropping, impact) may destroy the control module. Control module must then no longer be used.

- Before new control module can be assembled, pump motor adapter must first be inserted until it stops and engages. Adapter guide must not be damaged.
- The adapter supplied as replacement part for control module can be engage only once and then must not be separated again.
- The white grouting compound on base of control module serves as a seal and must not be removed.
- All contact surfaces on adapter, pressure sensor and control module as well as silicon gel and sealing elements must not be touched by hand or objects, soiled or damaged.

- Press adapter into adapter guide until it stops, it must then be engaged.
- Place control module without canting it onto hydraulic unit.
- Bolt hydraulic unit and control module with new TORX® bolts supplied.

Note

- *A new control module may be installed a max. of two times to a used hydraulic unit, to ensure that the elastic gasket seals sufficiently.*
- *Do not install a used control module.*

Control Module and Hydraulic Unit, Installing

Note

- *Do not remove sealing plugs at new hydraulic unit until the corresponding brake line is about to be installed.*
- *If the sealing plugs are removed too early, brake fluid can escape. If this occurs, unit may not be sufficiently filled or adequately bled.*

- Install in reverse order of removal.
- Remove -V.A.G 1869/2- .
- Bleed brake system, refer to ⇒ “1.1 Brake System, Bleeding”, page 107

- Enter radio code.
- Code the ABS Control Module -J104- with the vehicle diagnostic tester in "Guided Fault Finding".

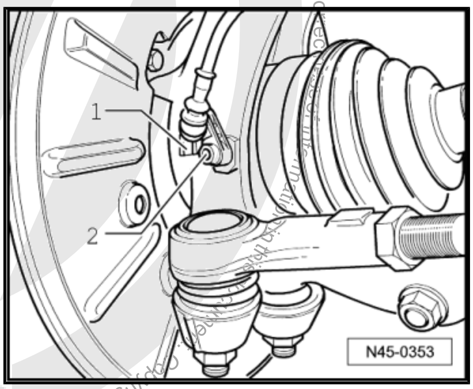
A steering angle sensor - G85- , transverse acceleration sensor - G200- and brake pressure sensor 1 - G201- basic setting must be done.

Tightening Specifications:	
Control module to ABS hydraulic unit ♦ Use new bolts!	5.5 Nm
Hydraulic unit hex bolt to bracket	8 Nm
Brake lines at ABS aggregate:	
Thread M 10 x 1	14 Nm
Thread M 12 x 1	14 Nm

4.4 Speed Sensor, Front Axle

Removing

- Raise the vehicle.



- Separate speed sensor and speed sensor wiring connector -1-.
- Remove bolt -2- from wheel bearing housing.
- Remove ABS speed sensor from wheel bearing housing.

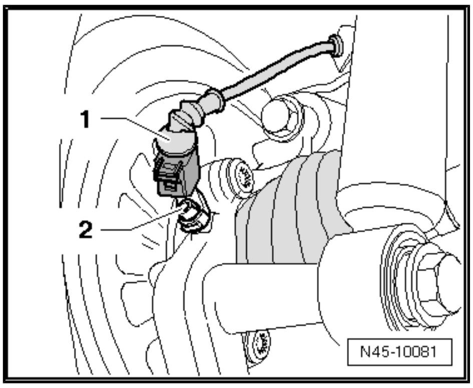
Installing

- Before inserting speed sensor, clean hole inner surface and coat speed sensor all-round with hot bolt paste G 052 112 A3.
- Insert the speed sensor into the hole in the wheel bearing housing and tighten the bolt to 8 Nm.
- Connect speed sensor to speed sensor wiring.

4.5 Speed Sensor, Rear Axle, AWD

Removing

- Raise the vehicle.



- Separate speed sensor and speed sensor wiring connector -1-.
- Remove bolt -2- from wheel bearing housing.
- Remove ABS speed sensor from wheel bearing housing.

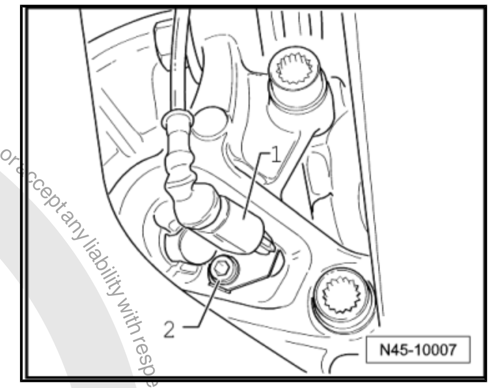
Installing

- Before inserting speed sensor, clean hole inner surface and coat speed sensor all-round with hot bolt paste G 052 112 A3.
- Insert the speed sensor into the hole in the wheel bearing housing and tighten the bolt to 8 Nm.
- Connect speed sensor to speed sensor wiring.

4.6 Speed Sensor, Rear Axle, FWD

Removing

- Raise the vehicle.



– Separate speed sensor and speed sensor wiring connector -1-.

– Remove bolt -2- from wheel bearing housing.

– Remove ABS speed sensor from wheel bearing housing.

Installing

– Before inserting speed sensor, clean hole inner surface and coat speed sensor all-round with hot bolt paste G 052 112 A3.

– Insert the speed sensor into the hole in the wheel bearing housing and tighten the bolt to 8 Nm.

– Connect speed sensor to speed sensor wiring.

4.7 ESP Sensor Unit - G419-

The transverse acceleration sensor - G200- , rotation rate sensor - G202- and longitudinal acceleration sensor - G251- are installed in a housing under the right front seat.

After replacing ESP sensor unit - G419- , a transverse acceleration sensor - G200- basic setting must be performed.

⚠ WARNING

Strong vibrations (for example falls, impacts) can destroy the ESP sensor unit . ESP sensor unit must then no longer be used.

Removing

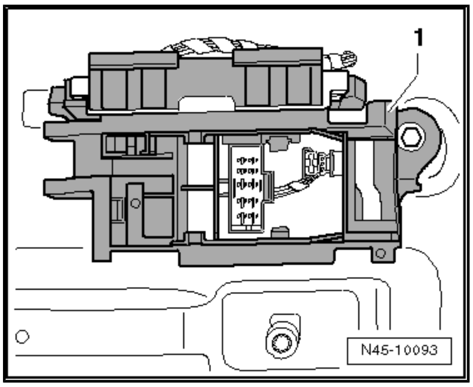
– Remove the right front seat with the seat frame, refer to “Front Seats” in ⇒ Body Interior; Rep. Gr. 72 ; Removal and Installation .

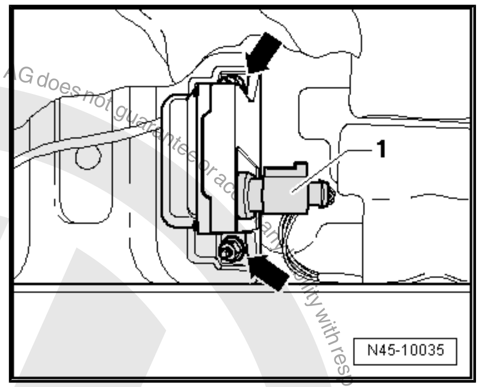
– Remove sill panel trim, refer to ⇒ Body Interior; Rep. Gr. 68 ; Removal and Installation .

– Lift carpet and lay it aside.

– Remove connector station -1-.

– Raise floor covering.





- Disconnect connector -1- from ESP sensor unit .
- Remove the two nuts -arrows-.
- Remove ESP sensor unit .

Installing

- Install in reverse order of removal.

When installing ESP sensor unit , be sure it is properly seated on the bracket and is free of tension.

Note

Do not use the securing nuts to forcibly position the ESP sensor unit .

- Tighten the nuts to 9 Nm.
- Perform transverse acceleration sensor - G200- basic setting.

-VAS 5051- , connecting and selecting functions, refer to ⇒ “2.1 Vehicle Diagnostic Tester Connecting and Selection Functions”, page 13 .

4.8 Steering Angle Sensor - G85-

Steering angle sensor is installed between steering wheel and steering column switch.

Removing and Installing

Refer to “Steering Column Switch” in ⇒ Electrical Equipment;; Rep. Gr. 94 ; Removal and Installation .

- Afterwards, basic setting of steering angle sensor must be performed.

-VAS 5051- , connecting and selecting functions, refer to ⇒ “2.1 Vehicle Diagnostic Tester Connecting and Selection Functions”, page 13 .

Note

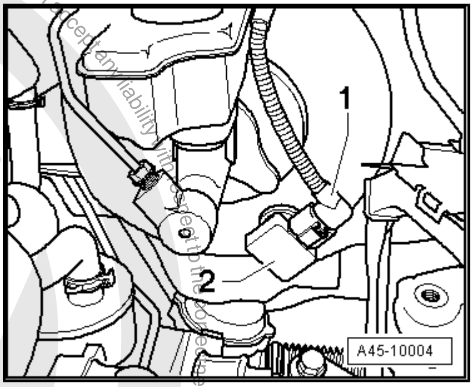
From calendar week 22/2008, the steering angle sensor is located inside the steering gear on vehicles equipped with generation 3 electro-mechanical steering.

4.9 Brake Booster Vacuum Sensor - G483-

Removing

- Battery, removing and installing, refer to ⇒ Electrical equipment; Rep. Gr. 27 ; Removal and Installation .
- Remove the battery carrier.

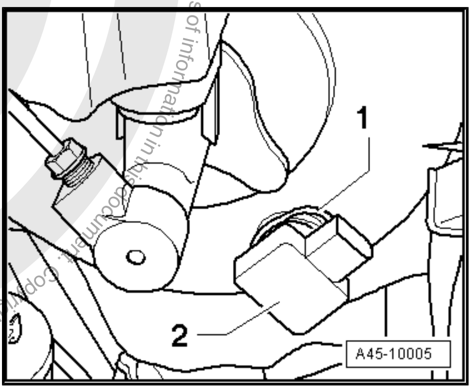
- Disconnect harness connector -1- from brake booster vacuum sensor -2-.
- Insert a screwdriver between stop and one end of securing ring into groove of sealing ring.



- Now press securing ring -1- as far out of groove until brake booster vacuum sensor -2- can be pulled out of brake booster.

Installing

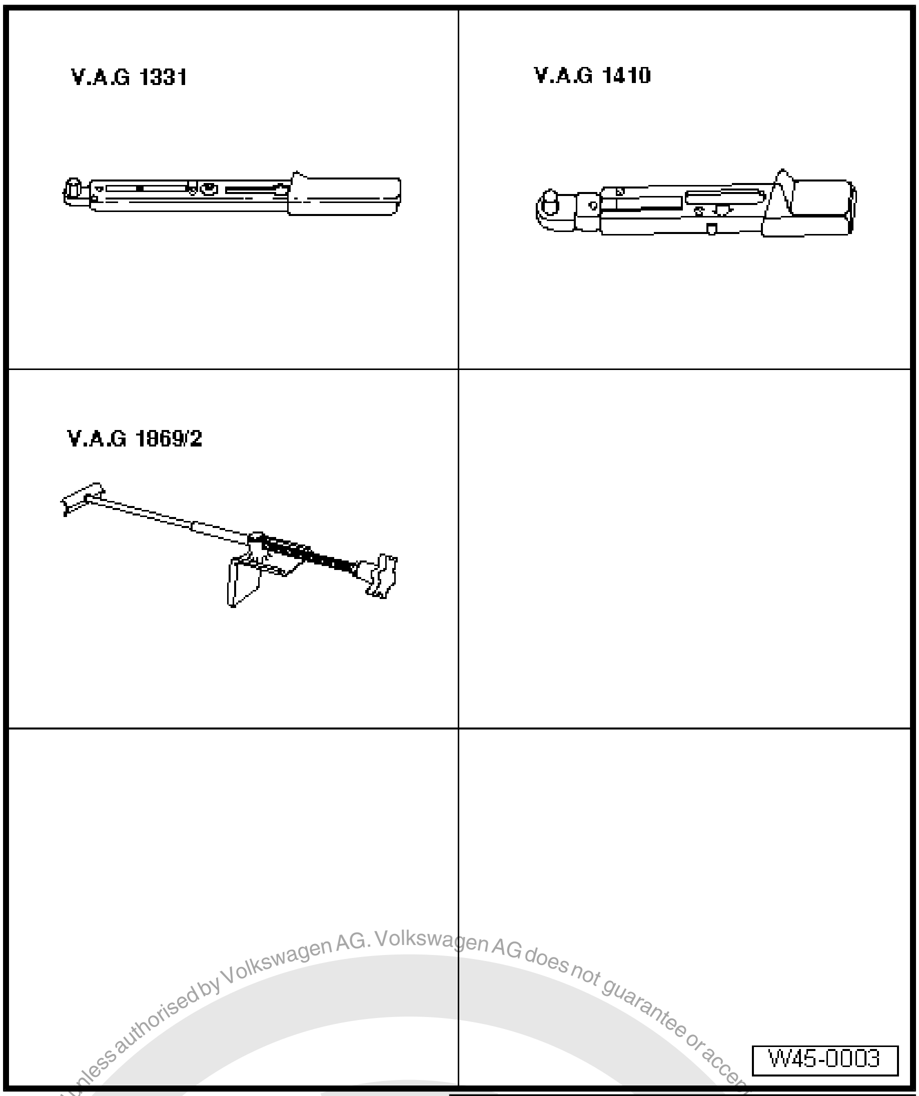
- Install in reverse order of removal.

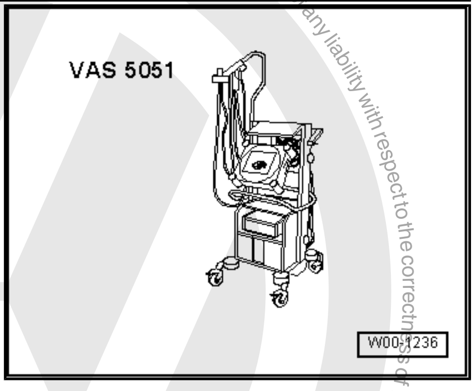


5 Special Tools

Special tools and workshop equipment required

- Torque Wrench 5-50 Nm - V.A.G 1331-
- Torque Wrench - V.A.G 1410-
- Brake Pedal Actuator - V.A.G 1869/2-
- Vehicle Diagnostic Tester - VAS 5051-
- Diagnostic Cable - VAS 5051/1- or - VAS 5051/3-


V.A.G 1331
V.A.G 1410
V.A.G 1869/2
W45-0003


VAS 5051
W00-1236

46 – Mechanical Components

1 Description and Operation

⇒ “1.1 Front Brakes”, page 51

⇒ “1.2 Rear Brakes”, page 59

⇒ “1.3 Parking Brake Lever Overview”, page 67

⇒ “1.4 Brake Pedal Overview”, page 67

⇒ “1.5 Parking Brake, Adjusting”, page 68

1.1 Front Brakes

⇒ “1.1.1 FS III Caliper Overview”, page 51

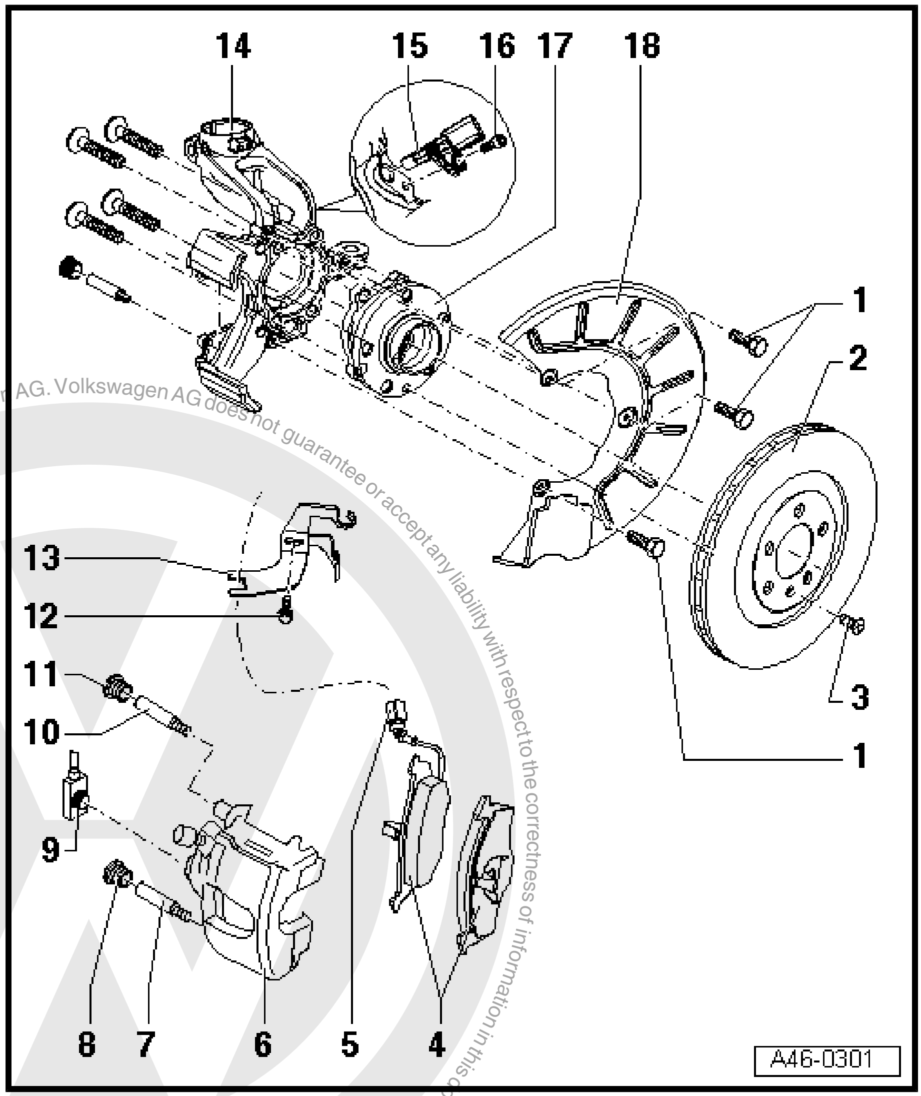
⇒ “1.1.2 FN 3 Caliper Overview”, page 53

⇒ “1.1.3 FNR-G Caliper Overview”, page 57

1.1.1 FS III Caliper Overview

Note

- *After replacing brake pads, depress brake pedal firmly several times with vehicle stationary so that the brake pads are properly seated in their normal operating position.*
- *Use brake charger/bleeder unit - VAS 5234- or extraction device -V.A.G 1869/4- to extract brake fluid from brake fluid reservoir.*
- *Before removing brake caliper or disconnecting brake hose, brake pedal depressor - V.A.G 1869/2- must be inserted (this dissipates pressure).*



1 - Hex Head/TORX® Bolt

- ☐ 12 Nm
- ☐ Hex head bolt M6x10 changed from TORX® bolt M6x12.
- ☐ Replace hex head screw with hex head bolt and TORX® bolt with TORX® bolt.

2 - Brake Rotor

- ☐ Internally vented, 280 mm diameter
- ☐ Thickness 22 mm
- ☐ Wear limit: 19 mm
- ☐ Must always be replaced together on both sides of axle (Rotors replaced in pairs per axle)
- ☐ Remove brake caliper before removing.

3 - Phillips Head / TORX® Bolt

- ☐ 4 Nm

4 - Brake Pads

- ☐ Thickness 14 mm without backing plate
- ☐ With wear indicator
- ☐ When wear limit is reached (limit: approximately 4 mm), the warning lamp lights up in instrument cluster.
- ☐ Wear limit: 2 mm without backing plate
- ☐ Checking thickness, refer to “Front and Rear Brake Pads, Checking Thickness” in ⇒ Maintenance Procedures; Rep. Gr. 03 ; Maintenance Procedures .
- ☐ Must always be replaced together on both sides of axle.
- ☐ Removing and Installing, refer to ⇒ “3.1.1 Brake Pads, FS III”, page 72 .

5 - Harness Connector

- ☐ Brake pad wear indicator.

6 - Brake Caliper

- ☐ Do not remove the brake hose when changing the brake pads.
- ☐ Removing and Installing, refer to ⇒ “3.1.2 Brake Caliper, FS III”, page 75 .
- ☐ Servicing, refer to ⇒ “2.1.2 Brake Caliper Overview, FS III ”, page 112 .

7 - Guide Pins

- ☐ 30 Nm

8 - Cap

- ☐ Remove

9 - Brake Hose with Ring Connection and Banjo Bolt

- ☐ 35 Nm

10 - Guide Pins

- ☐ 30 Nm

11 - Cap

- ☐ Remove

12 - Bolt

13 - Bracket

14 - Wheel Bearing Housing

- ☐ With integrated brake carrier
- ☐ Coat the pad guide surfaces lightly with lithium grease G 052150 A2.

15 - ABS Wheel Speed Sensor

- ☐ Before inserting sensor, clean inner surface of bore hole and coat with hot bolt paste G 052 112 A3.

16 - Hex Socket Head Bolt

- ☐ 8 Nm

17 - Wheel Bearing/Hub Unit

- ☐ The ABS sensor ring is installed in the wheel bearing.

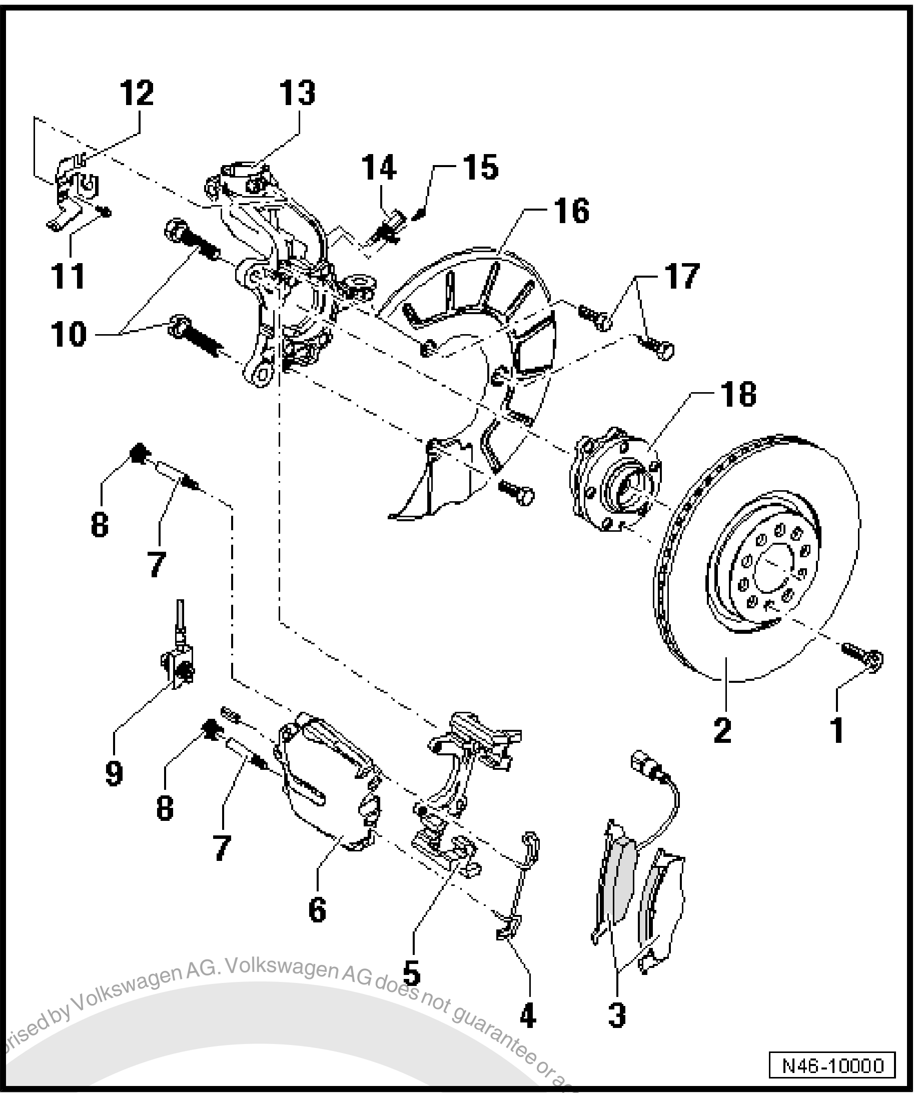
18 - Cover Plate

1.1.2 FN 3 Caliper Overview

Note

- ♦ *After replacing brake pads, depress brake pedal firmly several times with vehicle stationary so that the brake pads are properly seated in their normal operating position.*
- ♦ *Use brake charger/bleeder unit - VAS 5234- or extraction device -V.A.G 1869/4- to extract brake fluid from brake fluid reservoir.*
- ♦ *Before removing brake caliper or disconnecting brake hose, brake pedal depressor - V.A.G 1869/2- must be inserted (this dissipates pressure).*

Assembly Overview FN3 15 inch:



1 - Phillips Head/ TORX® Bolt,

- ☐ 4 Nm

2 - Brake Rotor

- ☐ Internally vented, 288 mm diameter
- ☐ Thickness 25 mm
- ☐ Wear limit: 22 mm
- ☐ Must always be replaced together on both sides of axle (Rotors replaced in pairs per axle)
- ☐ Remove brake caliper and brake carrier before removing.

3 - Brake Pads

- ☐ Thickness 14 mm without backing plate
- ☐ With wear indicator
- ☐ When wear limit is reached (limit: approximately 4 mm), the warning lamp lights up in instrument cluster.
- ☐ Wear limit: 2 mm without backing plate
- ☐ Checking thickness, refer to “Front and Rear Brake Pads, Checking Thickness” in ⇒ Maintenance Procedures; Rep. Gr. 03 ; Maintenance Procedures .
- ☐ Must always be replaced together on both sides of axle.
- ☐ Removing and Installing, refer to ⇒ “3.1.3 Brake Pads, FN 3”, page 76 .

4 - Spring

- ☐ Insert in both holes of brake caliper.

5 - Brake Carrier

- ☐ Bolt to wheel bearing housing.

6 - Brake Caliper

- ☐ Do not remove the brake hose when changing the brake pads.
- ☐ Removing and Installing, refer to ⇒ “3.1.4 Brake Caliper, FN 3”, page 78 .
- ☐ Servicing, refer to ⇒ “5.1.2 Brake Caliper Piston, FN 3 ”, page 130 .

7 - Guide Pins

- ☐ 30 Nm

8 - Cap

- ☐ Remove

9 - Brake Hose with Ring Connection and Banjo Bolt

- ☐ 35 Nm

10 - Ribbed Bolt

- ☐ 190 Nm
- ☐ Clean if using again.

11 - Bolt

12 - Bracket

13 - Wheel Bearing Housing

- ☐ With fastened brake carrier.

14 - ABS Wheel Speed Sensor

- ☐ Before inserting sensor, clean inner surface of bore hole and coat with hot bolt paste G 052 112 A3.

15 - Hex Socket Head Bolt

- ☐ 8 Nm

16 - Cover Plate

17 - Hex Head/TORX® Bolt

- ☐ 12 Nm
- ☐ Hex head bolt M6x10 changed from TORX® bolt M6x12.
- ☐ Replace hex head bolt with hex head screw and TORX® bolt with TORX® bolt.

18 - Wheel Bearing/Hub Unit

- ☐ The ABS sensor ring is installed in the wheel bearing.

Assembly Overview FN3 16 inch:

1 - TORX® Bolt

- ☐ 12 Nm

2 - Brake Rotor

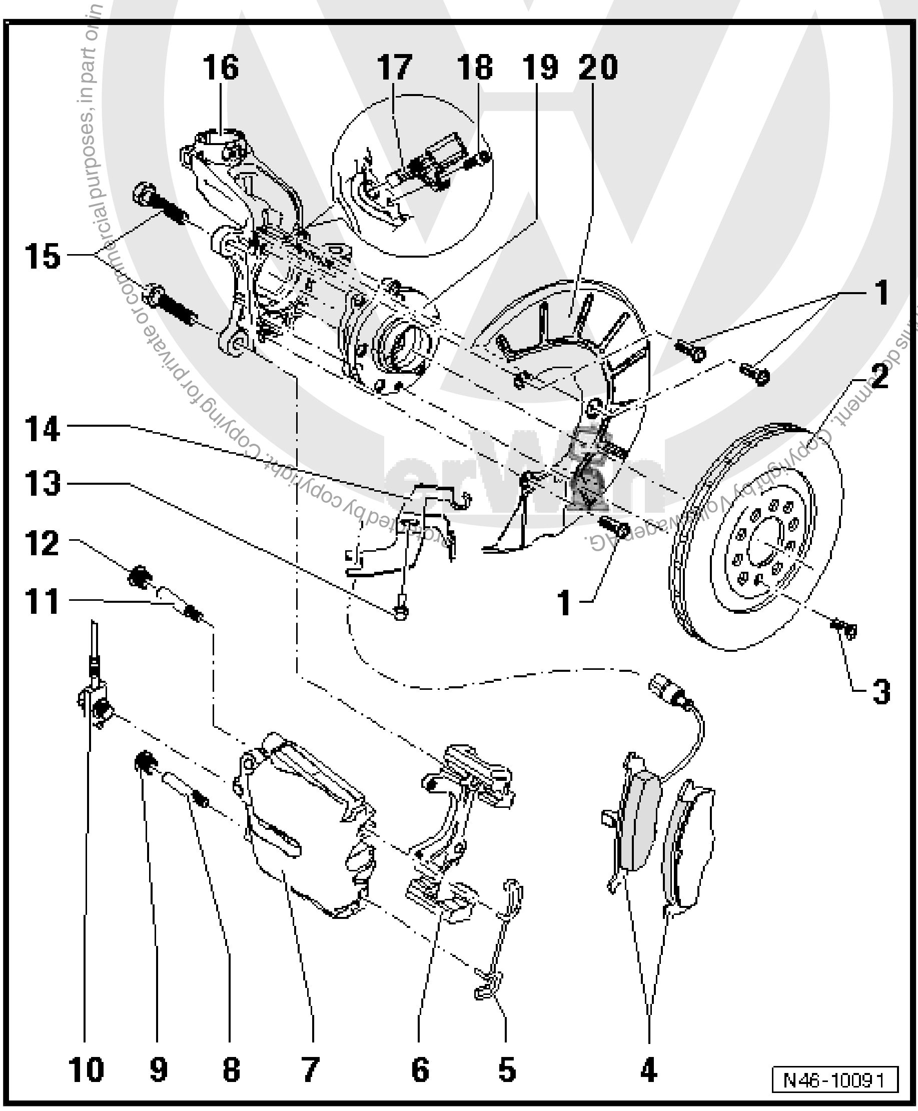
- ☐ Internally vented, 312 mm diameter
- ☐ Thickness 25 mm
- ☐ Wear limit: 22 mm
- ☐ Must always be replaced together on both sides of axle.
- ☐ Remove brake caliper and brake carrier before removing.

3 - TORX® Bolt

- ☐ 4 Nm

4 - Brake Pads

- ☐ Thickness 14 mm without backing plate
- ☐ With wear indicator
- ☐ When wear limit is reached (limit: approximately 4 mm), the warning lamp lights up in instrument cluster.
- ☐ Wear limit: 2 mm without backing plate
- ☐ Checking thickness, refer to “Front and Rear Brake Pads, Checking Thickness” in ⇒ Maintenance Procedures; Rep. Gr. 03 ; Maintenance Procedures .



- ☐ Must always be replaced together on both sides of axle.
- ☐ Removing and Installing, refer to ⇒ “3.1.3 Brake Pads, FN 3”, page 76 .

5 - Spring

- ☐ Insert in both holes of brake caliper.

6 - Brake Carrier

- ☐ Bolt to wheel bearing housing.

7 - Brake Caliper

- ☐ Do not remove the brake hose when changing the brake pads.
- ☐ Removing and Installing, refer to ⇒ “3.1.4 Brake Caliper, FN 3”, page 78 .
- ☐ Servicing, refer to ⇒ “5.1.2 Brake Caliper Piston, FN 3 ”, page 130 .

8 - Guide Pins

- ☐ 30 Nm

9 - Cap

- ☐ Remove

10 - Brake Hose with Ring Connection and Banjo Bolt

- ☐ 35 Nm

11 - Guide Pins

- ☐ 30 Nm

12 - Cap

- ☐ Remove

13 - Bolt

14 - Bracket

15 - Ribbed Bolt

- ☐ 190 Nm
- ☐ Clean if using again.

16 - Wheel Bearing Housing

- ☐ With fastened brake carrier.

17 - ABS Wheel Speed Sensor

- ☐ Before inserting sensor, clean inner surface of bore hole and coat with hot bolt paste G 052 112 A3.

18 - Hex Socket Head Bolt

- ☐ 8 Nm

19 - Wheel Bearing/Hub Unit

- ☐ The ABS sensor ring is installed in the wheel bearing.

20 - Cover Plate

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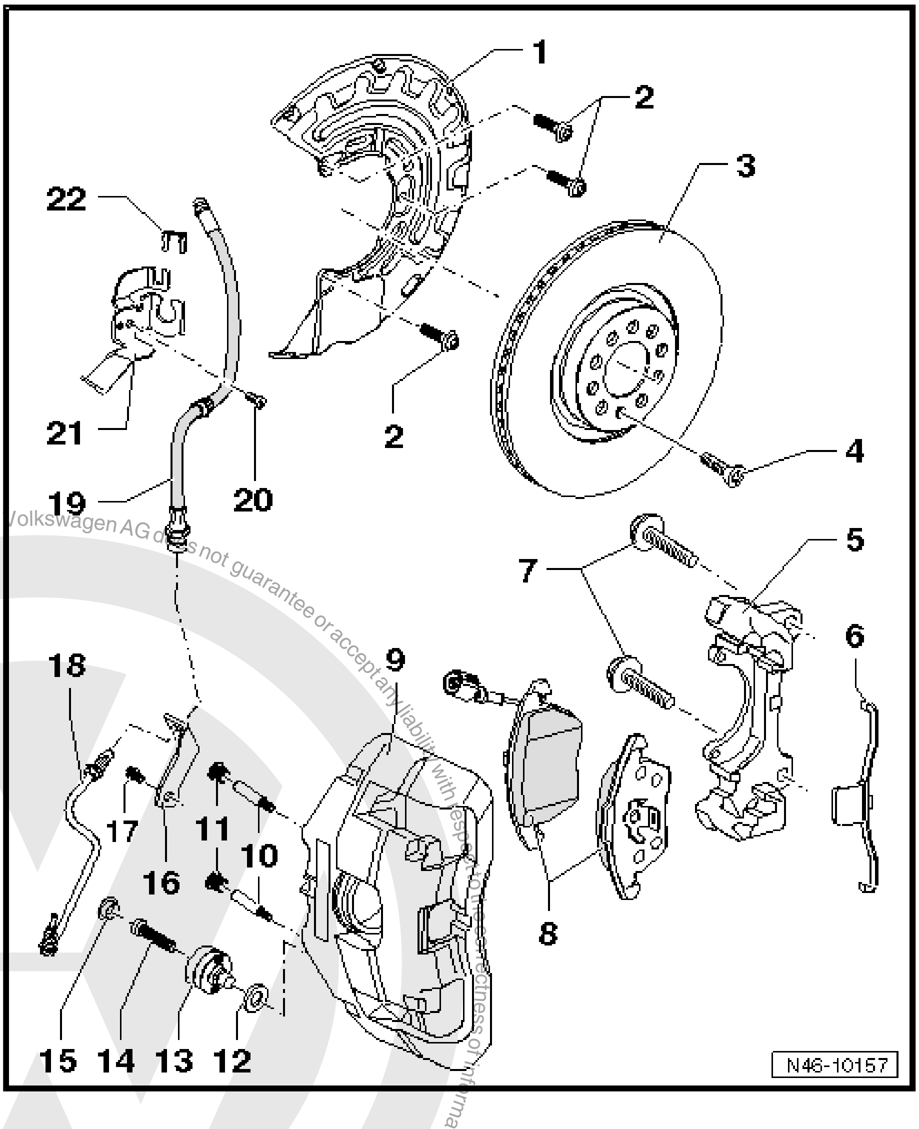
1.1.3 FNR-G Caliper Overview

Note

- *After replacing brake pads, depress brake pedal firmly several times with vehicle stationary so that the brake pads are properly seated in their normal operating position.*
- *Use brake charger/bleeder unit - VAS 5234- or extraction device -V.A.G 1869/4- to extract brake fluid from brake fluid reservoir.*
- *Before removing brake caliper or disconnecting brake hose, brake pedal depressor - V.A.G 1869/2- must be inserted (this dissipates pressure).*



1 - Cover Plate

2 - TORX® Bolt

- ☐ 12 Nm

3 - Brake Rotor

- ☐ Internally vented, 345 mm diameter
- ☐ Thickness 30 mm
- ☐ Wear limit: 27 mm
- ☐ Must always be replaced together on both sides of axle (Rotors replaced in pairs per axle)
- ☐ Remove brake caliper and brake carrier before removing.

4 - TORX® Bolt

- ☐ 4 Nm

5 - Brake Carrier

- ☐ Bolt to wheel bearing housing.

6 - Spring

- ☐ Insert in brake pad retaining spring and press below brake carrier.

7 - Ribbed Bolt

- ☐ Clean if using again.
- ☐ Tightening specification for the ribbed bolts ⇒ page 58 .

8 - Brake Pads

- ☐ Thickness 14 mm without backing plate.
- ☐ With wear indicator.
- ☐ When wear limit is reached (limit: approximately 4 mm), the warning lamp lights up in instrument cluster.
- ☐ Wear limit: 2 mm without backing plate
- ☐ Checking thickness, refer to “Front and Rear Brake Pads, Checking Thickness” in ⇒ Maintenance Procedures; Rep. Gr. 03 ; Maintenance Procedures .
- ☐ Must always be replaced together on both sides of axle.

- ☐ Removing and Installing, refer to ⇒ “3.1.5 Brake Pads, FNR-G ”, page 79

9 - Brake Caliper

- ☐ Do not remove the brake hose/brake line when changing the brake pads.
- ☐ Must not be separated from each other.
- ☐ Removing and Installing, refer to ⇒ “3.1.6 Brake Caliper, FNR-G ”, page 82 .
- ☐ Servicing, refer to ⇒ “2.1.3 Brake Caliper Overview, FNR-G ”, page 113 .

10 - Guide Pins

- ☐ 30 Nm

11 - Cap

- ☐ Remove

12 - Washer

13 - Vibration Damper

14 - Bolt

- ☐ 10 Nm

15 - Dust Cap

16 - Bracket

17 - Bolt

- ☐ 15 Nm

18 - Brake Line

- ☐ 14 Nm

19 - Brake Hose

20 - Hex Socket Head Bolt

- ☐ 8 Nm

21 - Bracket

22 - Spring Clamp

Tightening Specification for the Ribbed Bolts

Note

Tighten the ribbed bolts in 2 steps.

1. Step	Tighten both ribbed bolts on the brake carrier to 15 Nm.
2. Step	Tighten both ribbed bolts on the brake carrier to 200 Nm.

1.2 Rear Brakes

⇒ “1.2.1 CI 38 Caliper Overview”, page 59

⇒ “1.2.2 CII 41 Caliper Overview”, page 60

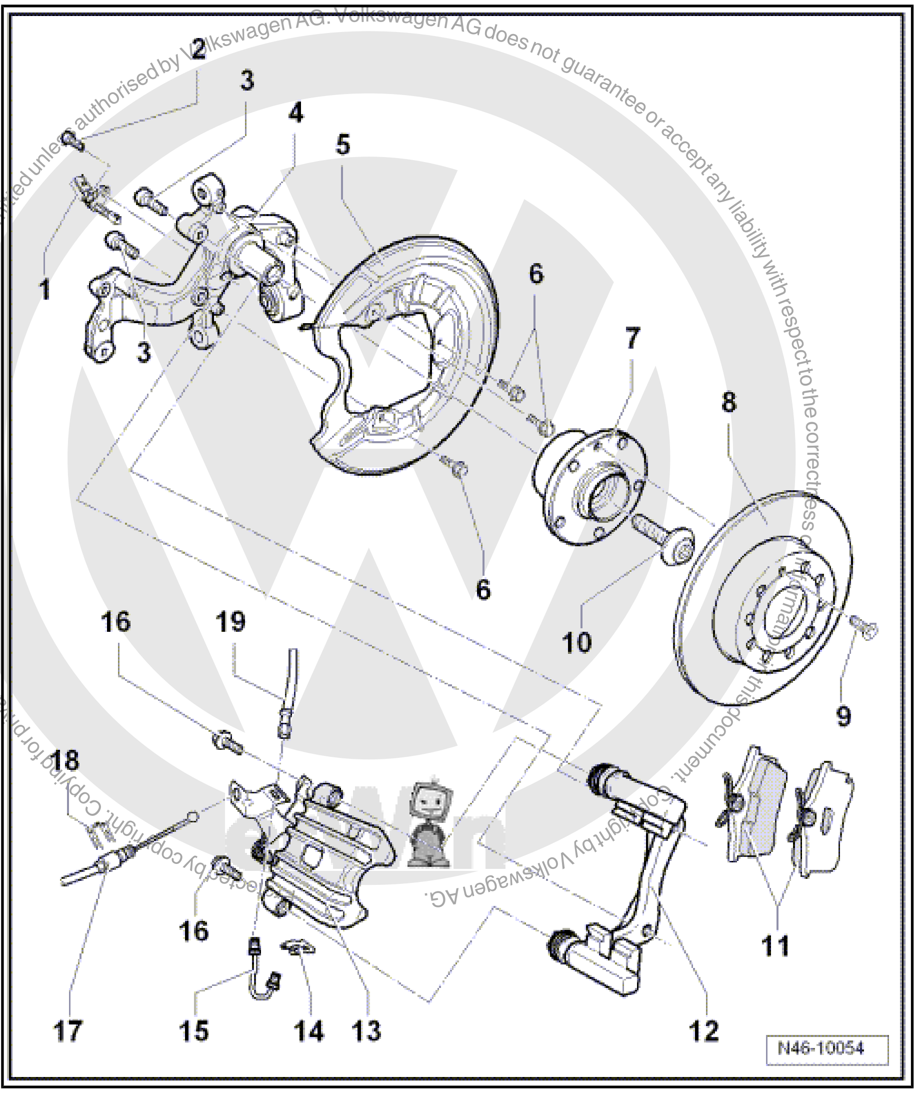
⇒ “1.2.3 CII 38 Caliper Overview”, page 63

⇒ “1.2.4 Bosch Caliper Overview”, page 65

1.2.1 CI 38 Caliper Overview

Note

- *After replacing brake pads, depress brake pedal firmly several times with vehicle stationary so that the brake pads are properly seated in their normal operating position.*
- *Use brake charger/bleeder unit - VAS 5234- or extraction device -V.A.G 1869/4- to extract brake fluid from brake fluid reservoir.*
- *Before removing brake caliper or disconnecting brake hose, brake pedal depressor - V.A.G 1869/2- must be inserted (this dissipates pressure).*



1 - ABS Wheel Speed Sensor

- ❑ Before inserting sensor, clean inner surface of bore hole and coat with hot bolt paste G 052 112 A3.

2 - Hex Socket Head Bolt

- ❑ 8 Nm

3 - Internal Multi-Point Bolt

- ❑ 90 Nm + 90° turn
- ❑ Always replace if removed.

4 - Wheel Bearing Housing

5 - Cover Plate

6 - Hex Head Bolt/TORX® Bolt

- ❑ 12 Nm TORX® bolt
- ❑ Hex head bolt 9 Nm
- ❑ Hex head bolt M6x10 changed from TORX® bolt M6x12.
- ❑ Replace hex head bolt with hex head bolt and TORX® bolt with TORX® bolt.

7 - Wheel Bearing/Hub Unit

8 - Brake Rotor

- ❑ 255 mm
- ❑ Thickness 10 mm
- ❑ Wear limit: 8 mm
- ❑ Always replace pads on both sides of axle if worn.

☐ Remove brake caliper before removing.

9 - Screw

☐ 4 Nm

10 - Bolt

11 - Brake Pads

☐ Thickness 11 mm without backing plate

☐ Wear limit: 2 mm without backing plate

☐ Checking thickness, refer to “Front and Rear Brake Pads, Checking Thickness” in ⇒ Maintenance Procedures; Rep. Gr. 03 ; Maintenance Procedures .

☐ Must always be replaced together on both sides of axle.

☐ Removing and Installing, refer to ⇒ “3.2.1 Brake Pads, CI 38”, page 84 .

12 - Brake Carrier with Guide Pins and Cap

☐ Supplied as an assembled replacement part with sufficient grease on guide pins.

☐ If protective caps or guide pins are damaged, install repair kit. Use supplied grease packet to lubricate guide pins.

13 - Brake Caliper

☐ Do not remove the brake hose when changing the brake pads.

☐ Removing and Installing, refer to ⇒ “3.2.2 Brake Caliper, CI 38”, page 86 .

☐ Servicing

☐ After servicing or replacing, parking brake cable must be adjusted first.

☐ Adjusting the parking brake, refer to ⇒ “1.5 Parking Brake, Adjusting”, page 68 .

14 - Hose Retainer

15 - Brake Line

☐ 14 Nm

16 - Self-Locking Bolt

☐ 35 Nm

☐ Replace

17 - Parking Brake Cable

☐ Adjusting the parking brake, refer to ⇒ “1.5 Parking Brake, Adjusting”, page 68 .

18 - Spring Clamp

19 - Brake Hose

1.2.2 CII 41 Caliper Overview

Note

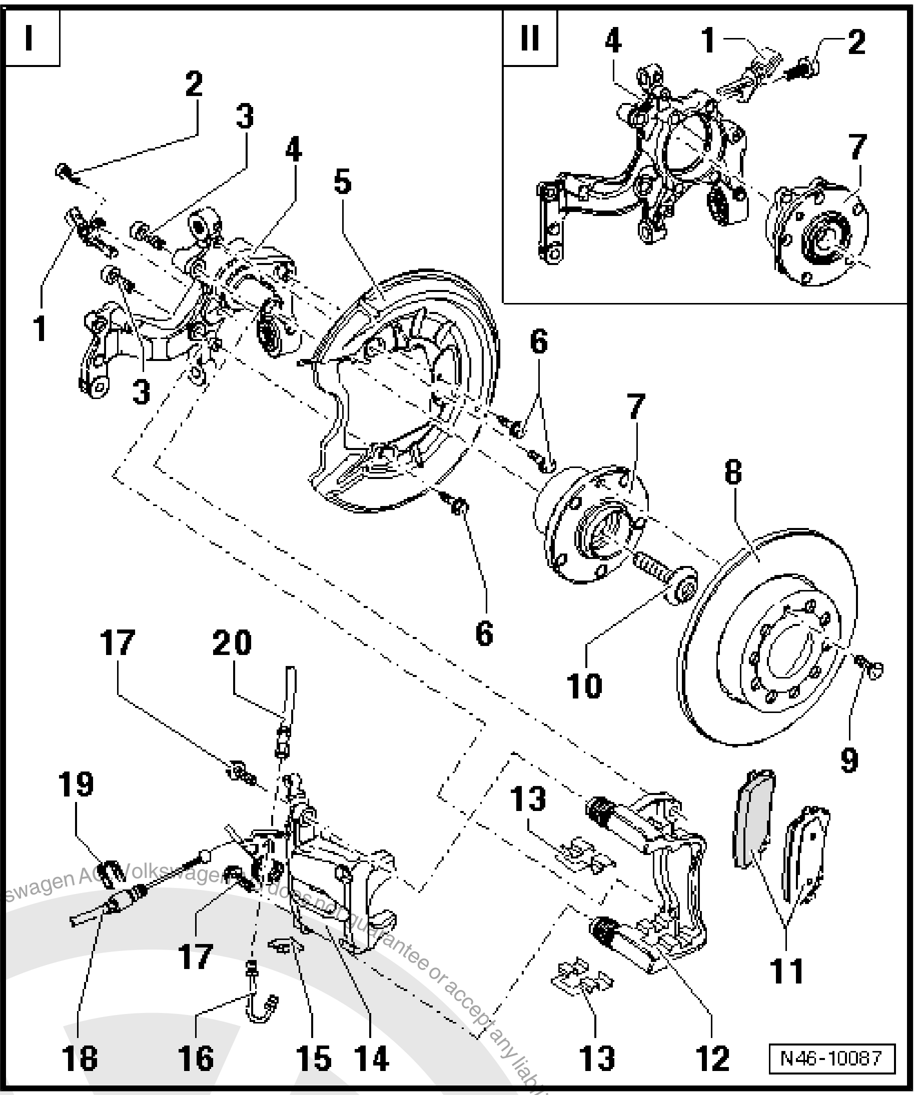
- *After replacing brake pads, depress brake pedal firmly several times with vehicle stationary so that the brake pads are properly seated in their normal operating position.*
- *Use brake charger/bleeder unit - VAS 5234- or extraction device -V.A.G 1869/4- to extract brake fluid from brake fluid reservoir.*
- *Before removing brake caliper or disconnecting brake hose, brake pedal depressor - V.A.G 1869/2- must be inserted (this dissipates pressure).*

Special tools and workshop equipment required

- Multipoint Socket - T10035-

I - Front Wheel Drive Assembly Overview

II - All Wheel Drive Differences



1 - ABS Wheel Speed Sensor
- ☐ Before inserting sensor, clean inner surface of bore hole and coat with hot bolt paste G 052 112 A3.

2 - Hex Socket Head Bolt
- ☐ 8 Nm

3 - Internal Multi-Point Bolt
- ☐ 90 Nm + 90°
- ☐ Always replace if removed.
- ☐ Removing and installing with -T10035- .

4 - Wheel Bearing Housing

5 - Cover Plate

6 - Hex Head Bolt, 9 Nm/ TORX® Bolt
- ☐ 12 Nm
- ☐ Hex head bolt M6x10 changed from TORX® bolt M6x12.
- ☐ Replace hex head bolt with hex head bolt and TORX® bolt with TORX® bolt.

7 - Wheel Bearing/Hub Unit

8 - Brake Rotor
- ☐ Diameter 15 inch: 260 mm, 16 inch: diameter 286 mm, 17 inch: diameter 310 mm
- ☐ Thickness 15 and 16 inches: 12 mm, 17 inches: 22 mm
- ☐ Wear limit 15 and 16 inches: 10 mm, 17 inches: 20 mm
- ☐ Always replace pads on both sides of axle if worn.
- ☐ Remove brake caliper before removing.

9 - Screw
- ☐ 4 Nm

10 - Bolt
- ☐ Only on front wheel drive.

11 - Brake Pads
- ☐ Thickness 11 mm without backing plate
- ☐ Wear limit: 2 mm without backing plate
- ☐ Checking thickness, refer to “Front and Rear Brake Pads, Checking Thickness” in ⇒ Maintenance Procedures; Rep. Gr. 03 ; Maintenance Procedures .
- ☐ Must always be replaced together on both sides of axle.
- ☐ Removing and Installing, refer to ⇒ “3.2.5 Brake Pads, CII 41”, page 90 .

12 - Brake Carrier with Different Guide Pins and Protective Cap
- ☐ Supplied as an assembled replacement part with sufficient grease on guide pins.

- If protective caps or guide pins are damaged, install repair kit. Use supplied grease packet to lubricate guide pins.
- Assembly guide: ⇒ Fig. ““Assembly Guide, Brake Carrier CII 41 15 inch from CW 32/04:”“ , page 62 .

13 - Brake Pad Retaining Plate

- Always replace when pads are replaced.

14 - Brake Caliper

- Do not remove the brake hose when changing the brake pads.
- Removing and Installing, refer to ⇒ “3.2.6 Brake Caliper, CII 41”, page 92 .
- Servicing, refer to ⇒ “1.4 Rear Brake Caliper, Servicing”, page 109 .
- After servicing or replacing, parking brake cable must be adjusted first.
- Adjusting the parking brake, refer to ⇒ “1.5 Parking Brake, Adjusting”, page 68 .

15 - Hose Retainer

16 - Brake Line

- 14 Nm

17 - Self-Locking Bolt

- 35 Nm
- Replace

18 - Parking Brake Cable

- Adjusting the parking brake, refer to ⇒ “1.5 Parking Brake, Adjusting”, page 68 .

19 - Spring Clamp

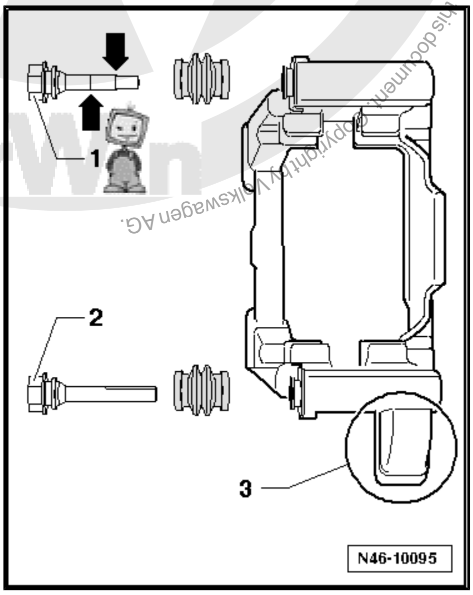
20 - Brake Hose

Assembly Guide, Brake Carrier CII 41 15 inch from CW 32/04:

1 - Short guide pins with stepping -arrows-, inlet side.

2 - Longer guide pins, outgoing.

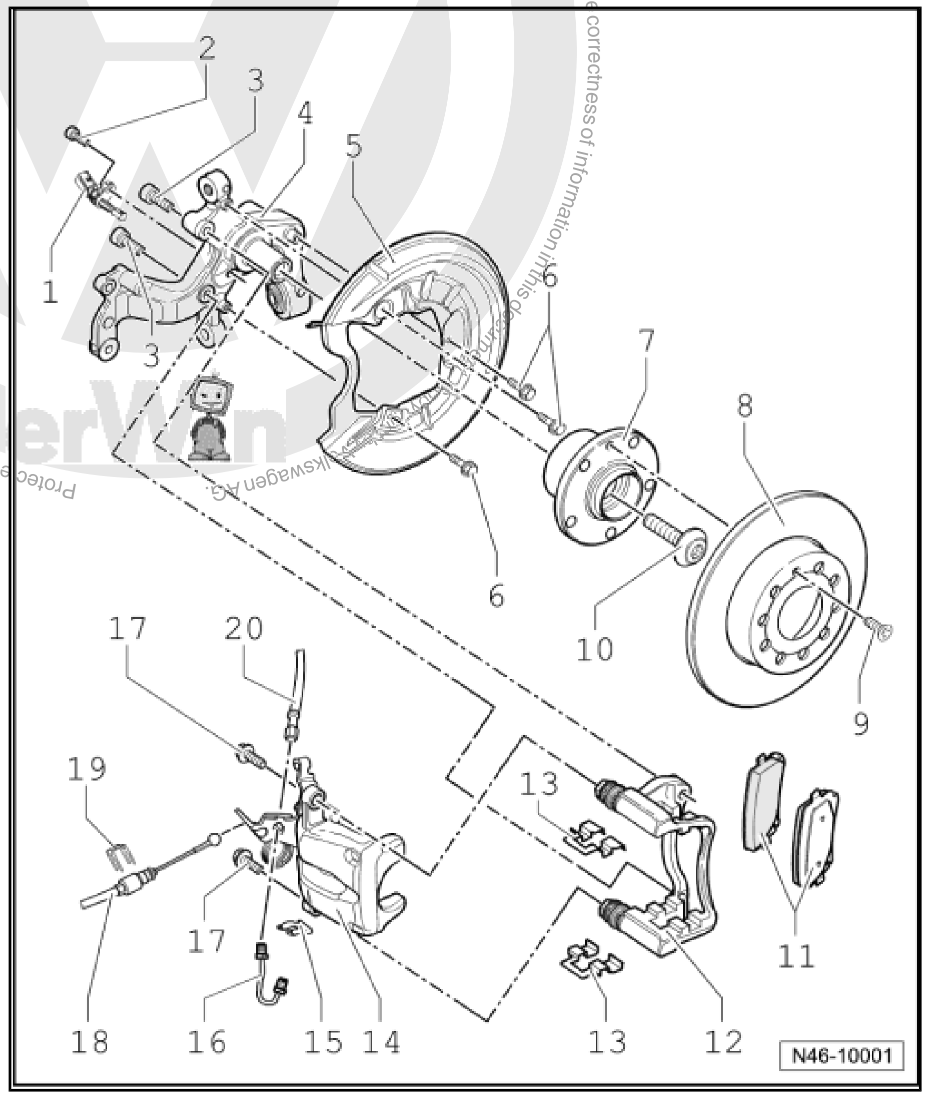
3 - Vibration dampener, outgoing.



1.2.3 CII 38 Caliper Overview

Note

- *After replacing brake pads, depress brake pedal firmly several times with vehicle stationary so that the brake pads are properly seated in their normal operating position.*
- *Use brake charger/bleeder unit - VAS 5234- or extraction device -V.A.G 1869/4- to extract brake fluid from brake fluid reservoir.*
- *Before removing brake caliper or disconnecting brake hose, brake pedal depressor - V.A.G 1869/2- must be inserted (this dissipates pressure).*



1 - ABS Wheel Speed Sensor
- ☐ Before inserting sensor, clean inner surface of bore hole and coat with hot bolt paste G 052 112 A3.

2 - Hex Socket Head Bolt
- ☐ 8 Nm

3 - Internal Multi-Point Bolt
- ☐ 90 Nm + 90° turn
- ☐ Always replace if removed.

4 - Wheel Bearing Housing

5 - Cover Plate

6 - TORX® Bolt,
- ☐ 12 Nm

7 - Wheel Bearing/Hub Unit

8 - Brake Rotor
- ☐ 286 mm
- ☐ Thickness 12 mm
- ☐ Wear limit: 10 mm
- ☐ Always replace pads on both sides of axle if worn.
- ☐ Remove brake caliper before removing.

9 - Screw
- ☐ 4 Nm

10 - Bolt
- ☐ Only on front wheel drive.

11 - Brake Pads
- ☐ Thickness 11 mm without backing plate
- ☐ Wear limit: 2 mm without backing plate
- ☐ Checking thickness, refer to “Front and Rear Brake Pads, Checking Thickness” in ⇒ Maintenance Procedures; Rep. Gr. 03 ; Maintenance Procedures .
- ☐ Must always be replaced together on both sides of axle.

- ☐ Removing and Installing, refer to ⇒ “3.2.3 Brake Pads, CII 38”, page 87 .

12 - Brake Carrier with Guide Pins and Cap

- ☐ Supplied as an assembled replacement part with sufficient grease on guide pins.
- ☐ If protective caps or guide pins are damaged, install repair kit. Use supplied grease packet to lubricate guide pins.

13 - Brake Pad Retaining Plate

- ☐ Always replace when pads are replaced.

14 - Brake Caliper

- ☐ Do not remove the brake hose when changing the brake pads.
- ☐ Removing and Installing, refer to ⇒ “3.2.4 Brake Caliper, CII 38”, page 89 .
- ☐ Servicing, refer to ⇒ “1.4 Rear Brake Caliper, Servicing”, page 109 .
- ☐ After servicing or replacing, parking brake cable must be adjusted first.
- ☐ Adjusting the parking brake, refer to ⇒ “1.5 Parking Brake, Adjusting”, page 68 .

15 - Hose Retainer

16 - Brake Line

- ☐ 14 Nm

17 - Self-Locking Bolt

- ☐ 35 Nm
- ☐ Replace

18 - Parking Brake Cable

- ☐ Adjusting the parking brake, refer to ⇒ “1.5 Parking Brake, Adjusting”, page 68 .

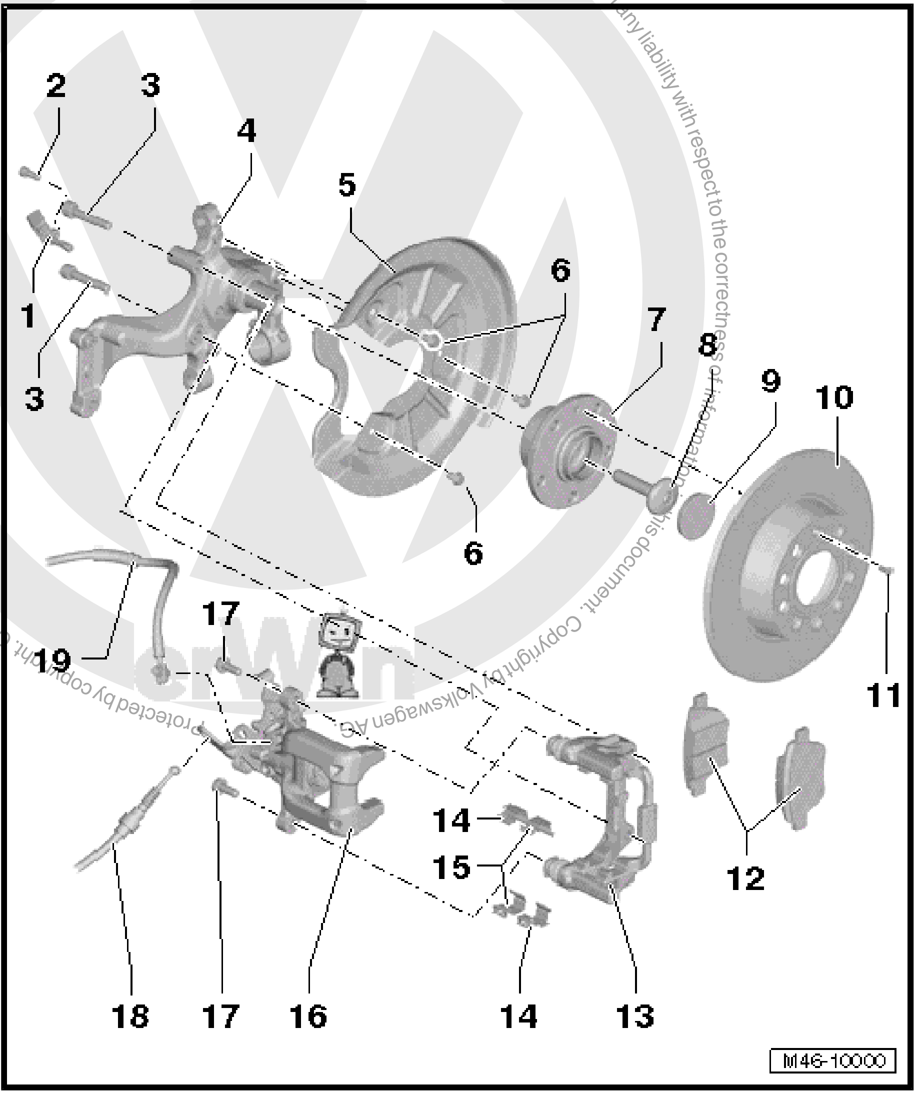
19 - Spring Clamp

20 - Brake Hose

1.2.4 Bosch Caliper Overview

Note

- *After replacing brake pads, depress brake pedal firmly several times with vehicle stationary so that the brake pads are properly seated in their normal operating position.*
- *Use brake charger/bleeder unit - VAS 5234- or brake charger/bleeder -V.A.G 1869/4- to extract brake fluid from brake fluid reservoir.*
- *Before removing a brake caliper or disconnecting a brake hose, the brake pedal loading device - V.A.G 1869/2- should be installed (relieve pressure).*



1 - ABS Speed Sensor
- ☐ Clean the inside of the hole and coat it with hot bolt paste - G 052 112 A3- before installing the sensor.

2 - Hex Socket Head Bolt
- ☐ 8 Nm

3 - Bolt
- ☐ 90 Nm and 90° turn
- ☐ Always replace if removed.

4 - Wheel Bearing Housing

5 - Cover Plate

6 - TORX® Bolt
- ☐ 12 Nm

7 - Wheel Hub with Wheel Bearing
- ☐ Different on FWD and AWD.

8 - Bolt
- ☐ Different on FWD and AWD.

9 - Dust Cap
- ☐ Only on front wheel drive.

10 - Brake Rotor
- ☐ 272 mm
- ☐ Thickness 10 mm
- ☐ Wear limit: 8 mm
- ☐ Replace both sides if worn.
- ☐ Remove brake caliper before removing.

11 - Bolt
- ☐ 4 Nm

12 - Brake Pads
- ☐ Thickness 12 mm without backing plate
- ☐ Wear limit: 2 mm without backing plate
- ☐ Checking thickness, refer to “Front and Rear Brake Pads, Checking Thickness” in ⇒ Maintenance Procedures; Rep. Gr. 03 ; Maintenance Procedures .

- ☐ Always replace on both axles.
- ☐ Removing and Installing, refer to ⇒ “3.2.7 Brake Pads, Bosch”, page 93 .

13 - Brake Carrier with Different Guide Pins and Protective Cap

- ☐ Supplied as an assembled replacement part with sufficient grease on guide pins.
- ☐ If the protective cap or guide pins are damaged use repair kit. Use supplied grease packet to lubricate guide pins.

14 - Brake Pad Retaining Plate

- ☐ Always replace when pads are replaced.

15 - Brake Pad Retaining Plate

- ☐ Always replace when pads are replaced.

16 - Brake Caliper

- ☐ Do not remove the brake hose when changing the brake pads.
- ☐ Removing and Installing, refer to ⇒ “3.2.8 Brake Caliper, Bosch”, page 95 .
- ☐ Servicing, refer to ⇒ “2.2.3 Brake Caliper Overview, Bosch”, page 116 .
- ☐ After servicing or replacing, parking brake cable must be adjusted first.
- ☐ Adjusting the parking brake, refer to ⇒ “1.5 Parking Brake, Adjusting”, page 68 .

17 - Self-Locking Bolt

- ☐ 35 Nm
- ☐ Always replace after removing.

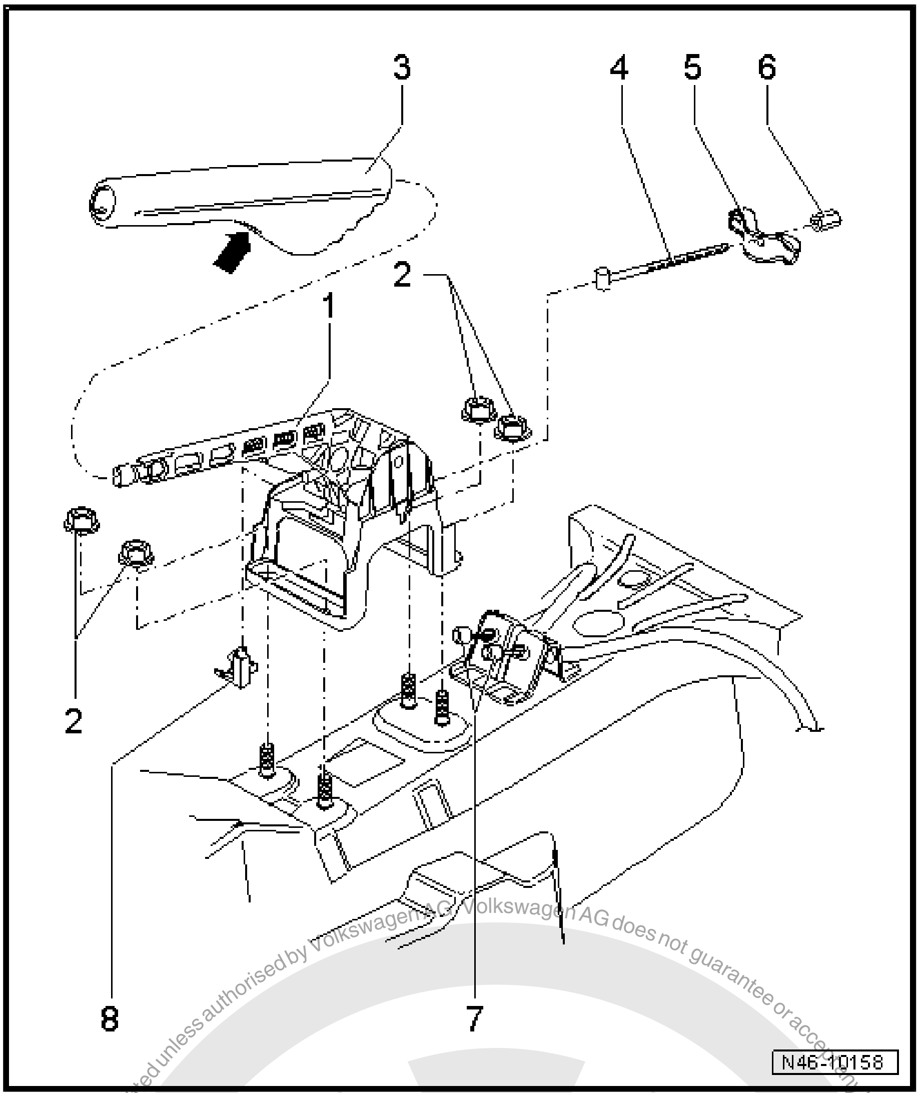
18 - Parking Brake Cable

- ☐ Both tabs must be engaged in the brake caliper bracket.
- ☐ Removing and Installing, refer to ⇒ “3.4 Parking Brake Lever, from MY 2008”, page 99 .
- ☐ Adjusting the parking brake, refer to ⇒ “1.5 Parking Brake, Adjusting”, page 68 .

19 - Brake Hose with Ring Connection and Banjo Bolt

- ☐ 35 Nm

1.3 Parking Brake Lever Overview



1 - Parking Brake Lever

- ☐ Remove center console before removing.

2 - Nut

- ☐ 15 Nm

3 - Trim for Parking Brake Lever

- ☐ Pull off forward.
- ☐ Pry off release tab in rear bottom handle area -arrow- with a screwdriver.
- ☐ With a leather version, leather in catch area is cut.

4 - Relay Rod

5 - Compensator Bracket

6 - Adjustment Nut

- ☐ Adjusting the parking brake, refer to ⇒ “1.5 Parking Brake, Adjusting”, page 68 .

7 - Parking Brake Cables

- ☐ Removing and Installing, through MY 2007, refer to ⇒ “3.3 Parking Brake Cable, to MY 2007”, page 98 .
- ☐ Removing and Installing, from MY 2008, refer to ⇒ “3.4 Parking Brake Lever, from MY 2008”, page 99 .

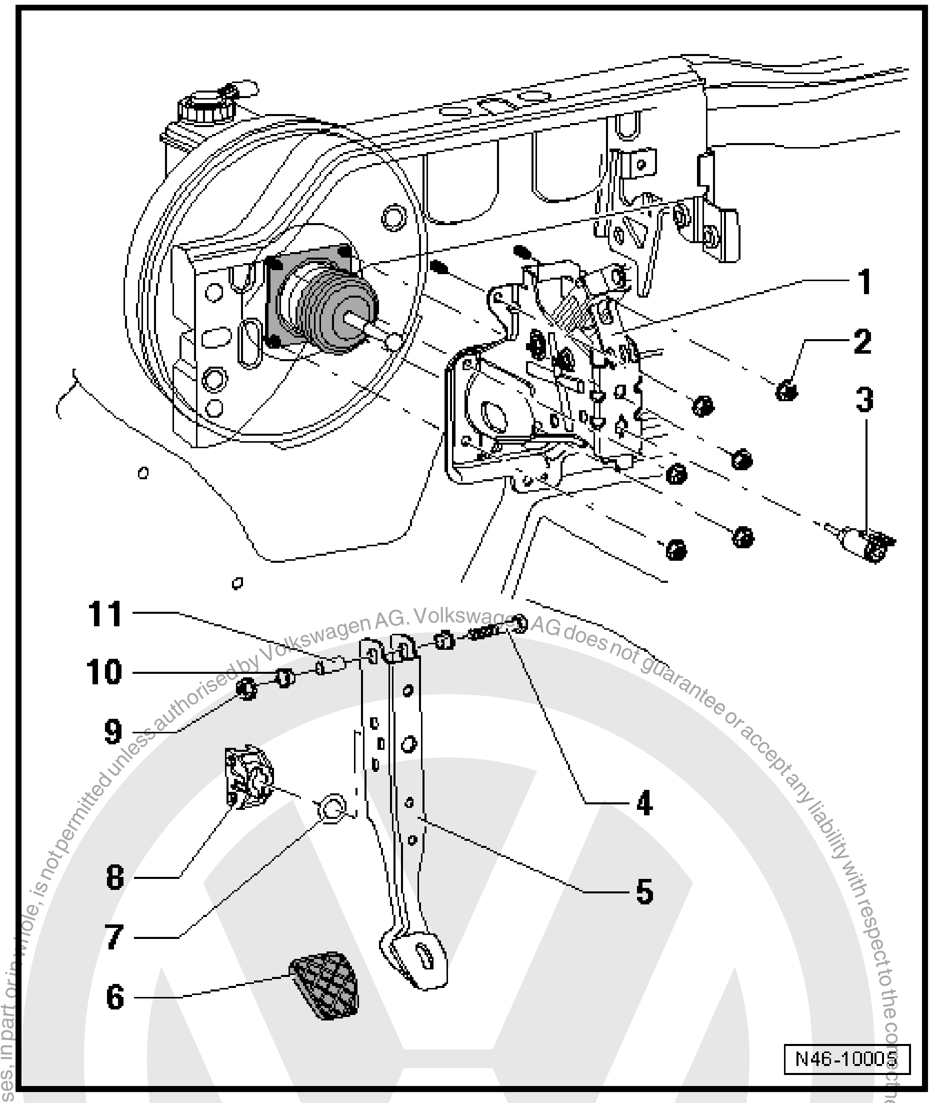
8 - Parking Brake Switch

1.4 Brake Pedal Overview

⚠ WARNING

The path of the brake pedal must not be shortened via extra floor mats.

Before installing, lubricate all mounting points with grease, part no. G 000 602.



1 - Bracket

2 - Self-Locking Nut

- ❑ 25 Nm

3 - Brake Lamp Switch - F-

- ❑ Includes brake pedal switch - F47- .
- ❑ On vehicles from CW 45/05, brake lamp switch - F- is located on brake master cylinder, refer to ⇒ “2.3 Brake Booster and Master Cylinder Overview”, page 117 .
- ❑ Clip brake pedal at pressure rod of brake booster before installing brake light switch ⇒ page 102 .
- ❑ Lubricate tappet head with polycarbamide grease G 052 142 A2.
- ❑ Brake light switch, removing and installing, refer to ⇒ “3.6 Brake Lamp Switch F , through 04 November 2005”, page 102 .

4 - Bolt

5 - Brake Pedal

6 - Cover

7 - Bearing Shell

8 - Mount

- ❑ For the ball head on the brake booster push rod.

9 - Self-Locking Nut

- ❑ 25 Nm

10 - Bearing Bushing

11 - Bearing Pin

1.5 Parking Brake, Adjusting

The parking brake must be adjusted after replacing the parking brake cable and the brake caliper.

– Depending on the center console version, either remove only the cupholder, the rear cover or the entire center console, refer to “Storage Compartments, Covers and Trim” in ⇒ Body Interior; Rep. Gr. 68 ; Removal and Installation .

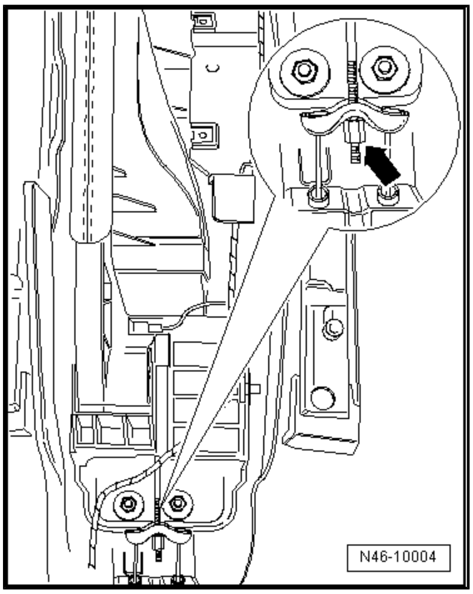
– Operate foot brake forcefully at least three times.

– Engage the parking brake three times and release it.

The parking brake lever must go back into the rest position by itself under the first detent.

- Parking brake lever in released position.

– Tighten adjustment nut -arrow (close-up)-...

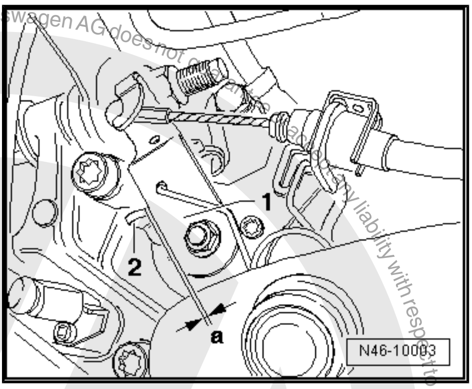


– ...until levers -1- on brake calipers lift off from stop -2-.

– The distance -a- to the stop -2- on the left and right brake caliper must not exceed 1.5 mm together.

– Check whether wheels turn freely.

Due to the automatic rear brake adjuster, there is no need to adjust the parking brake after making initial adjustment.



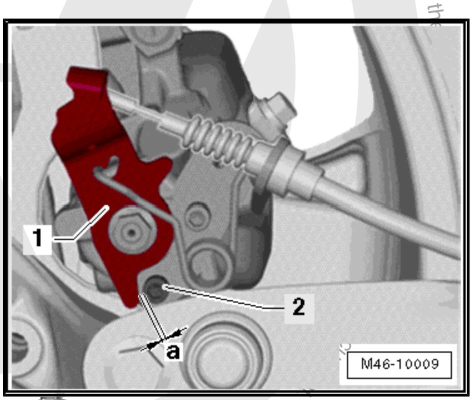
Vehicles with Bosch Rear Brakes.

– Tighten the adjusting nut until the levers -1- on the brake calipers lift off from their stops -2-.

– The distance-a- between the lever -1- to the stop -2- on the left and right brake calipers must not exceed 1.5 mm.

– Check whether wheels turn freely.

Due to the automatic rear brake adjuster, there is no need to adjust the parking brake after making initial adjustment.



2 Specifications

⇒ “2.1 Fastener Tightening Specifications”, page 70

2.1 Fastener Tightening Specifications

Component	Bolt Size	Nm
Front Brakes, FS III Caliper		
Brake hose with banjo fitting and union bolt	-	35
Brake rotor	-	4
Cover plate		
Hex bolt	M6x10	12
TORX®® bolt	M6x12	12
Guide pins	-	30
Front Brakes, FN 3 Caliper, 15 inch		
ABS wheel speed sensor	-	8
Brake hose with banjo fitting and union bolt	-	35
Brake rotor	-	4
Guide pins	-	30
Wheel bearing housing	-	190
Front brakes, FN 3 caliper, 16 inch		
ABS wheel speed sensor	-	8
Brake hose with banjo fitting and union bolt	-	35
Brake rotor	-	4
Cover Plate		
Hex bolt	M6x10	12
TORX®® bolt	M6x12	12
Guide pins, 30 Nm	-	30
Wheel bearing housing	-	190
Front Brakes, FNR-G Caliper		
Brake line	-	14
Brake rotor	-	4
Bracket for brake line	-	15
Cover plate	-	12
Guide pins	-	30
Vibration damper	-	10
Bracket for brake hose	-	8
CI 38 Rear Brakes		
ABS wheel speed sensor	-	8
Brake caliper[1]	-	35
Brake line	-	14
Brake rotor	-	4
Cover Plate		
Hex head bolt	M6x10	9
TORX®® bolt	M6x12	12
Wheel bearing housing[1]	-	90 + 90°
CII 38 Rear Brakes		
ABS wheel speed sensor	-	8

Component	Bolt Size	Nm
Brake caliper[1]	-	35
Brake line	-	14
Brake rotor	-	4
Cover plate	-	12
Wheel bearing housing[1]	-	90 + 90°
CII 41 Rear Brakes		
ABS wheel speed sensor	-	8
Brake caliper[1]	-	35
Brake line	-	14
Brake rotor	-	4
Cover plate		
Hex bolt	M6x10	12
TORX®® bolt	M6x12	12
Wheel bearing housing[1]	-	90 + 90°
Brake pedal, nut	-	25
Mounting bracket, nut	-	25
Parking brake lever, nut	-	15
• [1] Always replace		

Front Brakes, FNR-G Caliper Tightening Specification for the Ribbed Bolts

Note

Tighten the ribbed bolts in 2 steps.

1. Step	Tighten both ribbed bolts on the brake carrier to 15 Nm.
2. Step	Tighten both ribbed bolts on the brake carrier to 200 Nm.

3 Removal and Installation

⇒ “3.1 Front Brakes”, page 72

⇒ “3.2 Rear Brakes”, page 84

⇒ “3.3 Parking Brake Cable, to MY 2007”, page 98

⇒ “3.4 Parking Brake Lever, from MY 2008”, page 99

⇒ “3.5 Brake Pedal, Separating from Brake Booster”, page 101

⇒ “3.6 Brake Lamp Switch F , through 04 November 2005”, page 102

3.1 Front Brakes

⇒ “3.1.1 Brake Pads, FS III”, page 72

⇒ “3.1.2 Brake Caliper, FS III”, page 75

⇒ “3.1.3 Brake Pads, FN 3”, page 76

⇒ “3.1.4 Brake Caliper, FN 3”, page 78

⇒ “3.1.5 Brake Pads, FNR-G ”, page 79

⇒ “3.1.6 Brake Caliper, FNR-G ”, page 82

3.1.1 Brake Pads, FS III

Special tools and workshop equipment required

- Torque Wrench 5-50 Nm - V.A.G 1331-
- Piston Resetting Tool - T 10145-

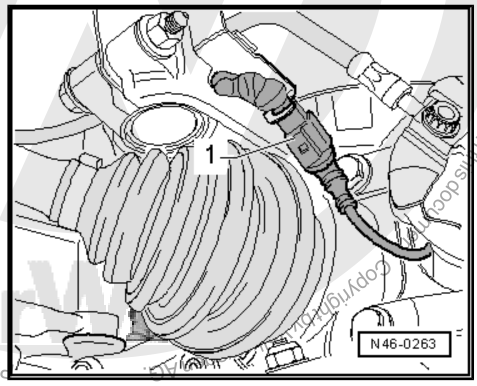
Removing

Note

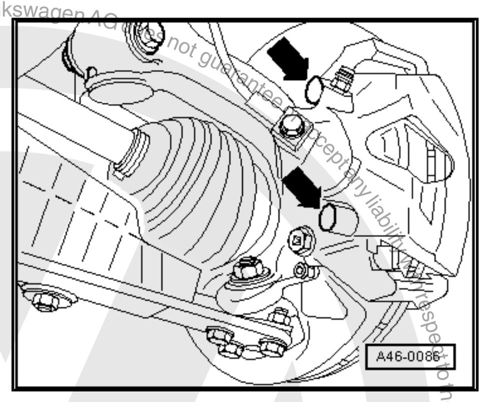
When removing, mark brake pads that will be used again. Install in the same position, otherwise braking effect will be uneven!

– Remove the wheels.

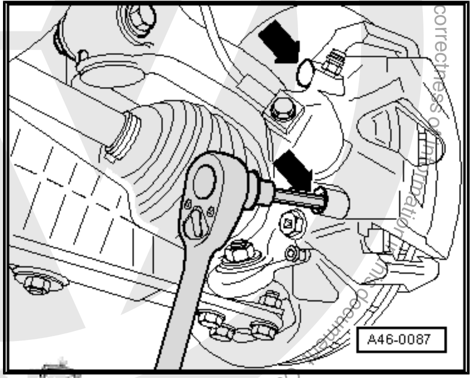
– Separate the connector -1- for brake pad wear indicator.



– Remove caps -arrows-.



– Loosen both guide pins -arrows- and remove from brake caliper.



– Remove brake caliper and secure with wire so that the weight of the brake caliper does not burden or damage the brake hose.

– Remove brake pads from brake caliper.

Cleaning:

⚠ WARNING

Do not blow brake system using compressed air, the dust produced is harmful to health!

– Thoroughly clean contact surfaces for brake pads at brake carrier, remove corrosion.

– Clean brake caliper.

Note

Use only appropriate solvents for cleaning brake caliper.

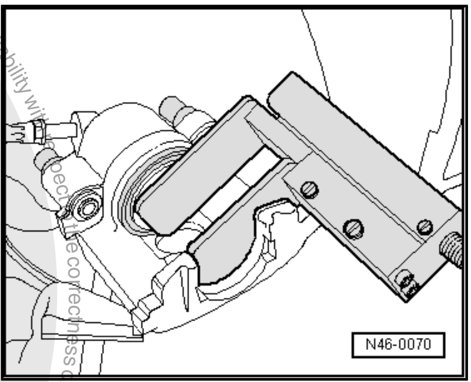
Installing

Note

Before pressing piston into cylinder using piston resetting tool, brake fluid must be extracted from brake fluid reservoir. Otherwise, especially if reservoir has been topped off, fluid will overflow and cause damage.

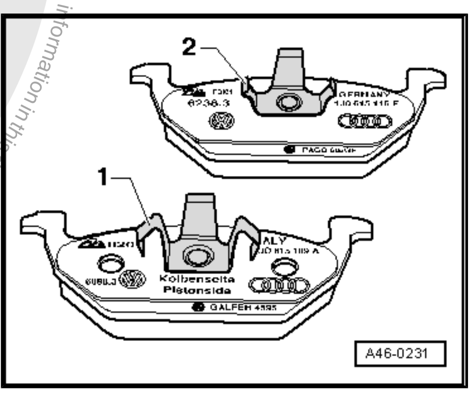
– Coat the pad guide surface on the brake carrier lightly with lithium grease G 052150 A2.

- Press piston back.

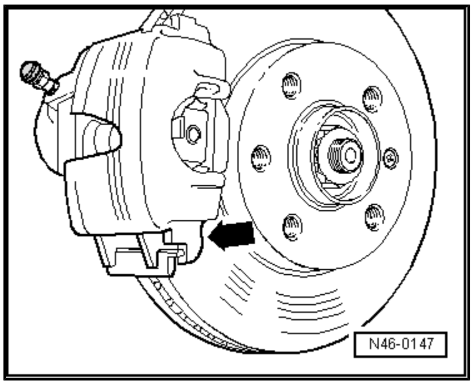


- Insert inner brake pad (piston side) -1- and outer brake pad -2- with retaining springs into brake caliper.

- ♦ Inner brake pad (piston side) with large three-finger clip -1-.
- ♦ Outer brake pad with small three-finger clip -2- (colored black).

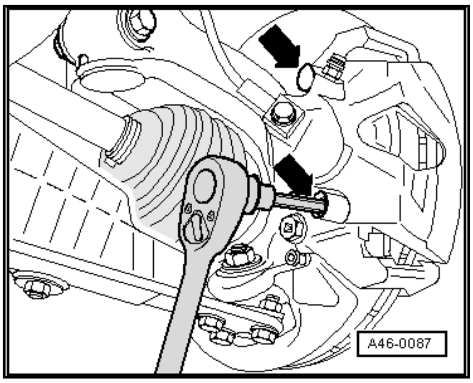


- Place brake caliper with brake pads on brake carrier first at bottom -arrow-.



- Tighten brake caliper to brake carrier using both guide pins.
- • Pin of brake caliper must stand behind guide of brake carrier!
- Install both protective caps.
- Connect brake pad wear indicator connector.
- Install wheels.

Torque specification for wheel bolts, refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 44 ; Specifications .



Note

- ♦ *After replacing brake pads, depress brake pedal firmly several times with vehicle stationary so that the brake pads are properly seated in their normal operating position.*
- ♦ *Check brake fluid level after replacing brake pad.*

Tightening Specifications:

Guide pin to brake carrier	30 Nm

3.1.2 Brake Caliper, FS III

Special tools and workshop equipment required

- ♦ Torque Wrench 5-50 Nm - V.A.G 1331-
- ♦ Brake Pedal Actuator - V.A.G 1869/2-

Removing

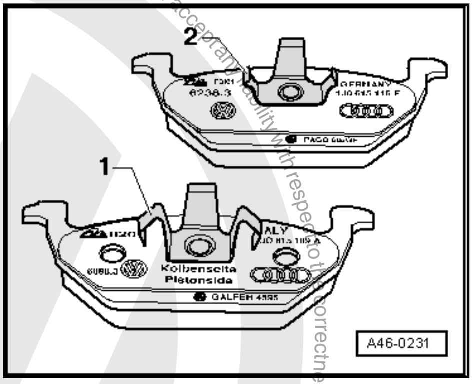
Note

Work procedure applies only for replacing or when performing subsequent service work on brake caliper.

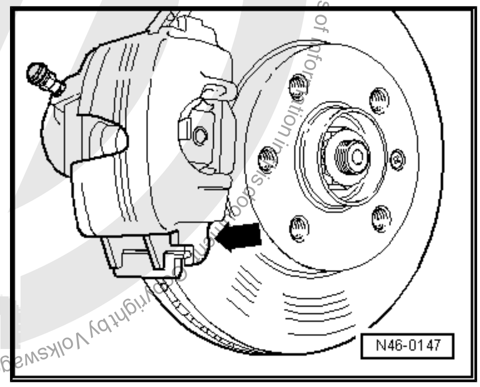
- – Remove the wheels.
- – Separate the connector for brake pad wear indicator.
- – Connect bleeder hose of bleeder bottle to bleeder valve of brake caliper and then open bleeder valve.
- – Insert -V.A.G 1869/2- .
- – Close bleeder valve and remove bleeder bottle.
- – Remove the brake hose.
- – Pull both cover caps from bushings of brake caliper.
- – Loosen both guide pins and remove from brake caliper.
- – Pull off brake caliper from brake carrier.
- – Remove brake pads from brake caliper.

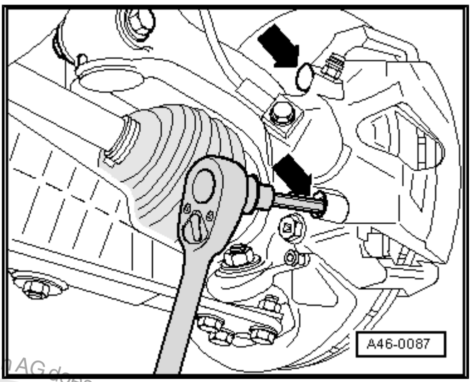
Installing

- • Piston is pressed back.
- – Insert inner brake pad (piston side) -1- and outer brake pad -2- with retaining springs into brake caliper.
- ♦ Inner brake pad (piston side) with large three-finger clip -1-.
- ♦ Outer brake pad with small three-finger clip -2- (colored black).



- – Place brake caliper with brake pads on brake carrier first at bottom -arrow-.





- Tighten brake caliper to brake carrier using both guide pins.
- • Pin of brake caliper must stand behind guide of brake carrier!
- Install both protective caps.
- Screw brake hose on brake caliper.
- Remove -V.A.G 1869/2- .
- Connect brake pad wear indicator connector.
- Bleed brake system, refer to ⇒ “1.1 Brake System, Bleeding”, page 107 .
- Install wheels.

Tightening specification for wheel bolts, refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 44 ; Specifications .

Note

- ♦ *Before moving vehicle, depress brake pedal several times firmly to properly seat brake pads in their normal operating position.*
- ♦ *Check brake fluid level.*

Tightening Specifications:	
Guide pin to brake carrier	30 Nm
Brake line to brake caliper	35 Nm

3.1.3 Brake Pads, FN 3

Special tools and workshop equipment required

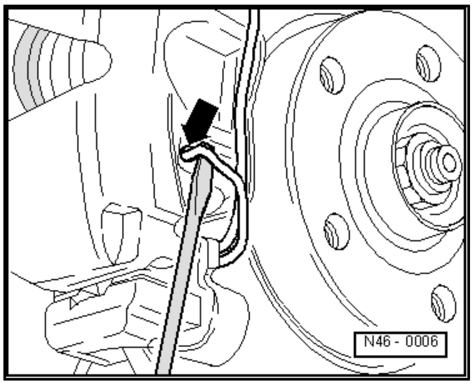
- ♦ Torque Wrench 5-50 Nm -V.A.G 1331-
- ♦ Piston Resetting Tool - T 10145-

Removing

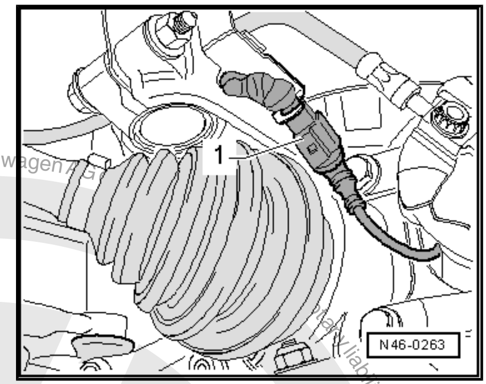
Note

When removing, mark brake pads that will be used again. Install in the same position, otherwise braking effect will be uneven!

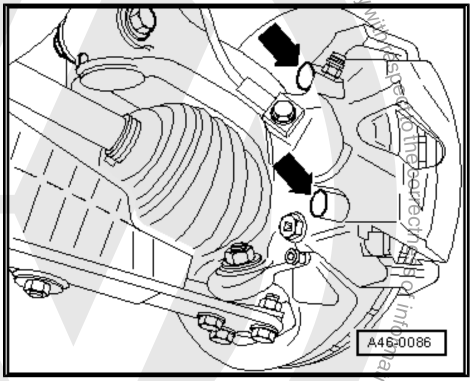
- Remove the wheels.
- Using screwdriver, pry off brake pad retaining spring from brake caliper -arrow- and remove.



– Separate the connector -1- for brake pad wear indicator.



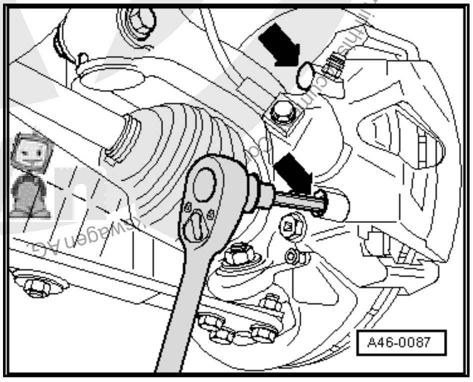
– Remove caps -arrows-.



– Loosen both guide pins -arrows- and remove from brake caliper.

– Remove brake caliper and secure with wire so that the weight of the brake caliper does not burden or damage the brake hose.

– Remove brake pad from brake caliper or from brake carrier.



Cleaning:

> ⚠ WARNING
>
> *Do not blow brake system using compressed air, the dust produced is harmful to health!*

– Thoroughly clean contact surfaces for brake pads at brake carrier, remove corrosion.

– Clean brake caliper, especially the adhesive surface for the brake pad, it must be free of residual adhesive and grease.

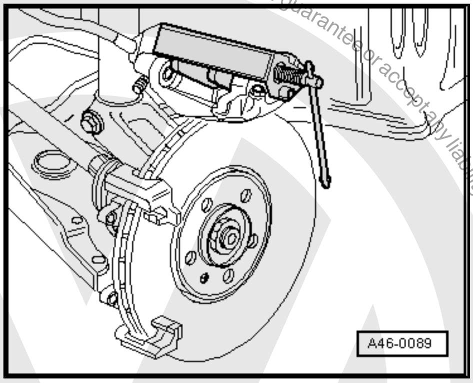
Note

Use only appropriate solvents for cleaning brake caliper.

Installing

Note

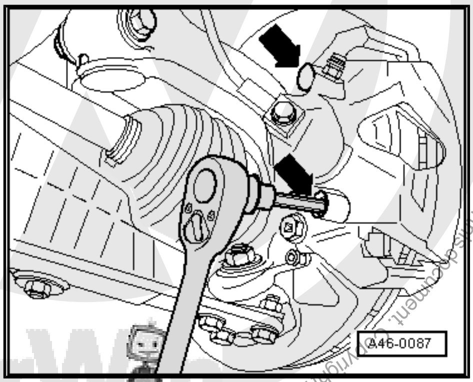
Before pressing piston into cylinder using piston resetting tool, brake fluid must be extracted from brake fluid reservoir. Otherwise, especially if reservoir has been topped off, fluid will overflow and cause damage.



- Press piston back.
- Remove protective foil on backing plate of outer brake pad.
- Install outer brake pad on brake carrier.
- Insert inner brake pad with retaining spring in brake caliper (piston).

When installing brake caliper, make sure that brake pad is not affixed to brake caliper before the correct installation position has been reached.

Do not damage the adhesion surface.



- Tighten brake caliper to brake carrier using both guide pins.
- Install both protective caps.
- Install retaining spring in brake caliper.
- Connect brake pad wear indicator connector.
- Install wheels.

Tightening specification for wheel bolts, refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 44 ; Specifications .

Note

- ♦ *After replacing brake pads, depress brake pedal firmly several times with vehicle stationary so that the brake pads are properly seated in their normal operating position.*
- ♦ *Check brake fluid level after replacing brake pad.*

Tightening Specifications:	
Guide pin to brake carrier	30 Nm

3.1.4 Brake Caliper, FN 3

Special tools and workshop equipment required

- ♦ Torque Wrench 5-50 Nm - V.A.G 1331-
- ♦ Brake Pedal Actuator - V.A.G 1869/2-

Removing

Note

Work procedure applies only for replacing or when performing subsequent service work on brake caliper.

- Remove the wheels.
- Using screwdriver, pry off brake pad retaining spring from brake caliper and remove.
- Separate the connector for brake pad wear indicator.
- Connect bleeder hose of bleeder bottle to bleeder valve of brake caliper and then open bleeder valve.
- Insert -V.A.G 1869/2- .
- Close bleeder valve and remove bleeder bottle.
- Remove the brake hose.

– Pull both cover caps from bushings of brake caliper.

– Loosen both guide pins and remove from brake caliper.

– Pull off brake caliper from brake carrier.

– Remove brake pads from brake caliper.

Installing

- Piston is pressed back.
- Outer brake pad sits on brake carrier.

– Insert inner brake pad with retaining spring in brake caliper (piston).

When installing brake caliper, make sure that brake pad is not affixed to brake caliper before the correct installation position has been reached.

Do not damage the adhesion surface.

– Tighten brake caliper to brake carrier using both guide pins.

– Install both protective caps.

– Screw brake hose on brake caliper.

– Remove -V.A.G 1869/2- .

– Install retaining spring in brake caliper.

– Connect brake pad wear indicator connector.

– Bleed brake system, refer to ⇒ “1.1 Brake System, Bleeding”, page 107 .

– Install wheels.

Torque specification for wheel bolts , refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 44 ; Specifications .

Note

♦ *Before moving vehicle, depress brake pedal several times firmly to properly seat brake pads in their normal operating position.*

♦ *Check brake fluid level.*

Tightening Specifications:	
Guide pin to brake carrier	30 Nm
Brake line to brake caliper	35 Nm

3.1.5 Brake Pads, FNR-G

Special tools and workshop equipment required

♦ Torque Wrench 5-50 Nm - V.A.G 1331-

♦ Piston Resetting Tool - T 10145-

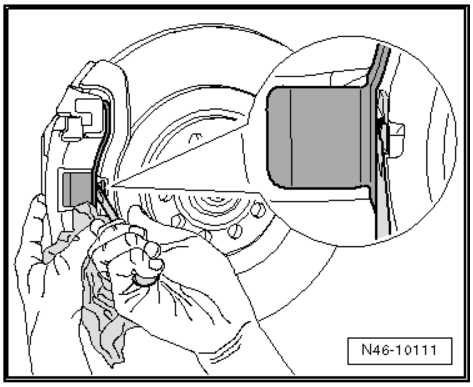
Removing

Note

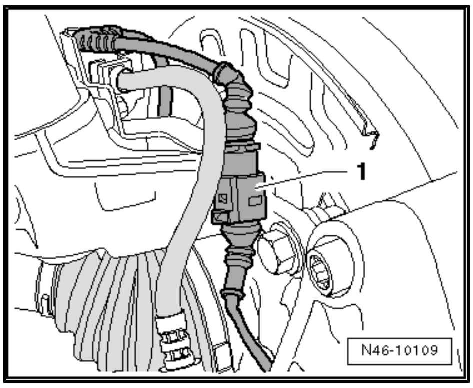
When removing, mark brake pads that will be used again. Install in the same position, otherwise braking effect will be uneven!

– Remove the wheels.

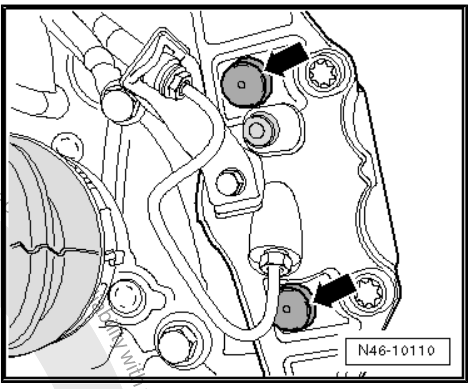
- Pry brake caliper retaining spring out of brake pad retaining spring with screwdriver. To do this, place screwdriver between both retaining springs -close-up-.
- Secure brake caliper retaining spring with a cloth when doing this so that it cannot jump away.

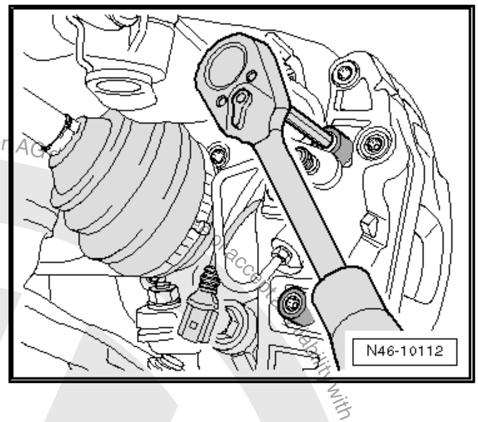


- Separate the connector -1- for brake pad wear indicator.



- Remove caps -arrows-.





- Loosen both guide pins -arrows- and remove from brake caliper.
- Remove brake caliper and secure with wire so that the weight of the brake caliper does not burden or damage the brake hose.
- Remove brake pads from brake caliper.

Cleaning:

> **WARNING**
>
> *Do not blow brake system using compressed air, the dust produced is harmful to health!*

- Thoroughly clean contact surfaces for brake pads at brake carrier, remove corrosion.
- Clean brake caliper.

Note

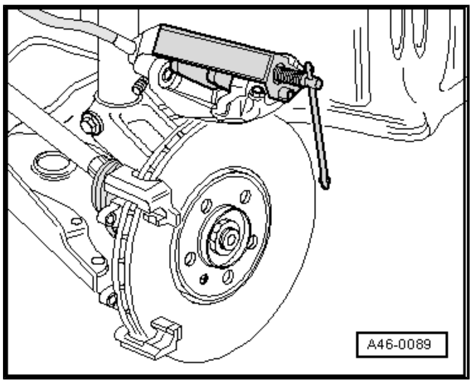
Use only appropriate solvents for cleaning brake caliper.

Installing

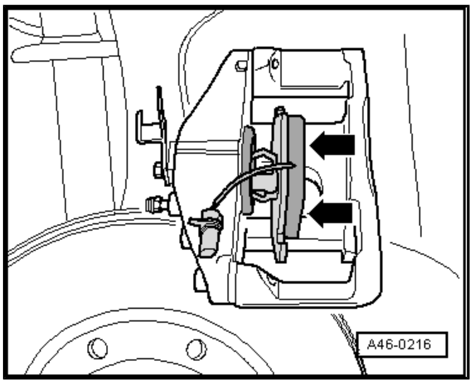
Note

Before pressing piston into cylinder using piston resetting tool, brake fluid must be extracted from brake fluid reservoir. Otherwise, especially if reservoir has been topped off, fluid will overflow and cause damage.

- Press piston back.

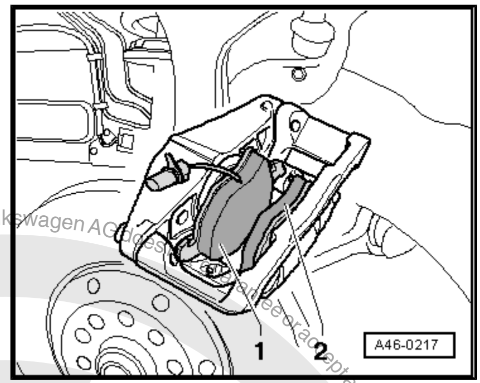


- Insert inner brake pad with retaining spring in brake caliper (piston).



– Set outer brake pad -2- with retaining springs into brake caliper.

– Place brake caliper with brake pads on brake carrier.



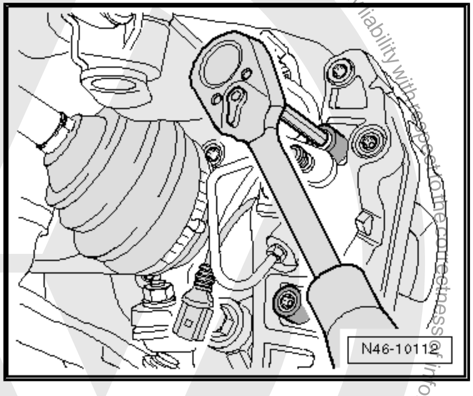
– Tighten brake caliper to brake carrier using both guide pins.

– Install both protective caps.

– Insert brake caliper retaining spring in brake pad retaining spring and press under brake carrier.

– Connect brake pad wear indicator connector.

– Install wheels.



Tightening specification for wheel bolts, refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 44 ; Specifications .

Note

- *After replacing brake pads, depress brake pedal firmly several times with vehicle stationary so that the brake pads are properly seated in their normal operating position.*
- *Check brake fluid level after replacing brake pad.*

Tightening Specifications:	
Guide pin to brake carrier	30 Nm

3.1.6 Brake Caliper, FNR-G

Special tools and workshop equipment required

- Torque Wrench 5-50 Nm - V.A.G 1331-
- Brake Pedal Actuator - V.A.G 1869/2-

Removing

Note

Work procedure applies only for replacing or when performing subsequent service work on brake caliper.

– Remove the wheels.

– Pry brake caliper retaining spring out of brake pad retaining spring with screwdriver. To do this, place screwdriver between both retaining springs.

– Secure brake caliper retaining spring with a cloth when doing this so that it cannot jump away.

– Separate the connector for brake pad wear indicator.

– Connect bleeder hose of bleeder bottle to bleeder valve of brake caliper and then open bleeder valve.

- Insert -V.A.G 1869/2- .
- Close bleeder valve and remove bleeder bottle.
- Remove the brake hose.
- Pull both cover caps from bushings of brake caliper.
- Loosen both guide pins and remove from brake caliper.
- Pull off brake caliper from brake carrier.
- Remove brake pads from brake caliper.

Installing

- Piston is pressed back.

- Insert inner brake pad with retaining spring in brake caliper (piston).
- Set outer brake pad with retaining springs into brake caliper.
- Place brake caliper with brake pads on brake carrier.
- Tighten brake caliper to brake carrier using both guide pins.
- Install both protective caps.
- Connect brake hose with brake caliper line.
- Remove -V.A.G 1869/2- .
- Insert brake caliper retaining spring in brake pad retaining spring and press under brake carrier.
- Connect brake pad wear indicator connector.
- Brake System, Bleeding
- Install wheels.

Torque specification for wheel bolts, refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 44 ; Specifications .

Note

- ♦ *Before moving vehicle, depress brake pedal several times firmly to properly seat brake pads in their normal operating position.*
- ♦ *Check brake fluid level.*

Tightening Specifications:	
Guide pin to brake carrier	30 Nm
Brake hose to brake line	14 Nm

3.2 Rear Brakes

⇒ “3.2.1 Brake Pads, CI 38”, page 84

⇒ “3.2.2 Brake Caliper, CI 38”, page 86

⇒ “3.2.3 Brake Pads, CII 38”, page 87

⇒ “3.2.4 Brake Caliper, CII 38”, page 89

⇒ “3.2.5 Brake Pads, CII 41”, page 90

⇒ “3.2.6 Brake Caliper, CII 41”, page 92

⇒ “3.2.7 Brake Pads, Bosch”, page 93

⇒ “3.2.8 Brake Caliper, Bosch”, page 95

3.2.1 Brake Pads, CI 38

Special tools and workshop equipment required

- Torque Wrench 5-50 Nm - V.A.G 1331-
- Resetting and Extracting Tool - T 10165-

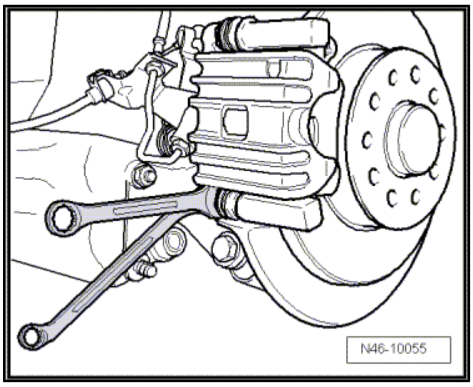
Removing

Note

When removing, mark brake pads that will be used again. Install in the same position, otherwise braking effect will be uneven!

– Remove the wheels.

- Counter-hold guide pins and remove attachment bolts from brake caliper.
- Remove brake caliper and secure with wire so that the weight of the brake caliper does not burden or damage the brake hose.
- Remove brake pads.



Cleaning:

WARNING

Do not blow brake system using compressed air, the dust produced is harmful to health!

- Thoroughly clean contact surfaces for brake pads at brake carrier, remove corrosion.
- Clean brake caliper, especially the adhesive surfaces for the brake pads, they must be free of residual adhesive and grease.

Note

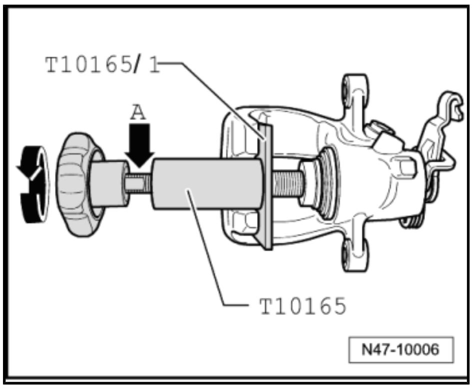
Use only appropriate solvents for cleaning brake caliper.

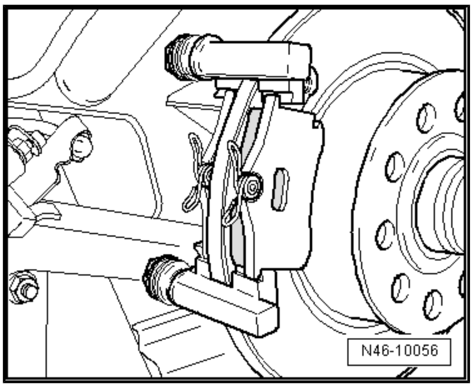
Installing

Note

Before pushing back the piston, extract some of the brake fluid out of the brake fluid reservoir using a bleeder bottle. Otherwise, especially if reservoir has been topped off, fluid will overflow and cause damage.

- Install pistons at knurled wheel on - T 10165 - by turning toward right. Do not damage protective caps.
- Use special tool 10165/1 for assistance when installing.
- ♦ For pistons that are difficult to move, an open-end wrench (size 13 mm) can be applied at the appropriate wrench surface -arrow A-.
- Remove protective foil on brake pad backing plates.





– Insert brake pads in brake carrier.

When installing brake caliper, make sure that brake pads are not affixed to brake caliper before the correct installation position has been reached.

– Secure brake caliper using new self-locking bolts.

♦ The repair kit includes four self-locking hex bolts which must be installed in all cases.

– Install wheels.

Torque specification for wheel bolts, refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 44 ; Specifications .

Note

♦ *After replacing brake pads, depress brake pedal firmly several times with vehicle stationary so that the brake pads are properly seated in their normal operating position.*

♦ *Check brake fluid level after replacing brake pad.*

Tightening Specifications:	
Hex bolt, brake caliper to brake carrier ♦ Use new bolts!	35 Nm

3.2.2 Brake Caliper, CI 38

Special tools and workshop equipment required

♦ Torque Wrench 5-50 Nm - V.A.G 1331-

♦ Brake Pedal Actuator - V.A.G 1869/2-

Removing

Note

Work procedure applies only for replacing or when performing subsequent service work on brake caliper.

– Remove the wheels.

– Unhook the brake cable from the lever on the brake caliper.

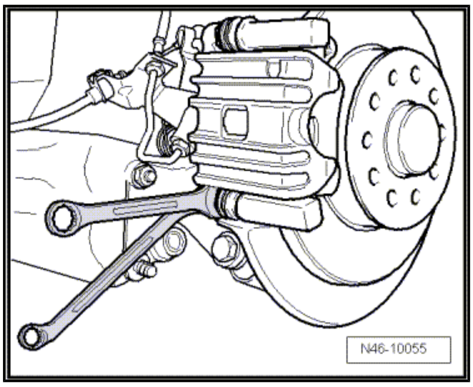
– Remove the spring clip and pull the brake cable from the holder on the brake caliper.

– Connect bleeder hose of bleeder bottle to bleeder valve of brake caliper and then open bleeder valve.

– Insert -V.A.G 1869/2- .

– Close bleeder valve and remove bleeder bottle.

– Remove the brake line.



– Remove both bolts from brake caliper, counter hold on guide pin when doing this.

– Pull off brake caliper from brake carrier.

Installing

• Piston is pressed back.

• Brake pads sit on the brake carrier.

– Secure brake caliper on brake carrier using new self-locking bolts.

– Screw brake line on brake caliper.

– Bleed brake system, refer to ⇒ “1.1 Brake System, Bleeding”, page 107 .

– Hook in the brake cable and secure it to the holder with the spring clip.

– Adjusting the parking brake, refer to ⇒ “1.5 Parking Brake, Adjusting”, page 68 .

– Install wheels.

Torque specification for wheel bolts, refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 44 ; Specifications .

Note

♦ *Before moving vehicle, depress brake pedal several times firmly to properly seat brake pads in their normal operating position.*

♦ *Check brake fluid level.*

Tightening Specifications:	
Hex bolt, brake caliper to brake carrier ♦ Use new bolts!	35 Nm
Brake line to brake caliper	14 Nm

3.2.3 Brake Pads, CII 38

Special tools and workshop equipment required

♦ Torque Wrench 5-50 Nm - V.A.G 1331-

♦ Resetting and Extracting Tool - T 10165-

Removing

Note

When removing, mark brake pads that will be used again. Install in the same position, otherwise braking effect will be uneven!

– Remove the wheels.

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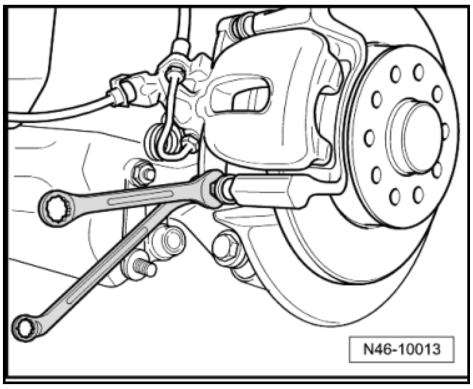
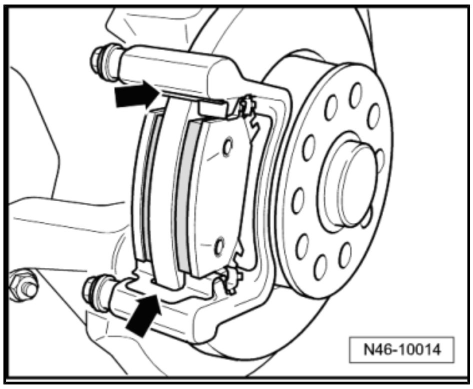
- Counter-hold guide pins and remove attachment bolts from brake caliper.
- Remove brake caliper and secure with wire so that the weight of the brake caliper does not burden or damage the brake hose.



- Remove brake pads and anti-rattle springs -arrows-.



Cleaning:

WARNING

Do not blow brake system using compressed air, the dust produced is harmful to health!

- Contact surfaces between brake pads and brake carrier must be cleaned, remove corrosion.
- Clean brake caliper.

Note

Use only appropriate solvents for cleaning brake caliper.

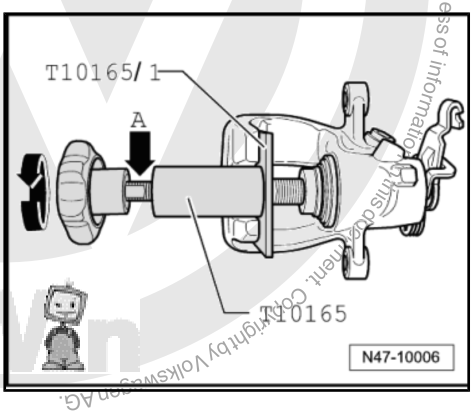
Installing

Note

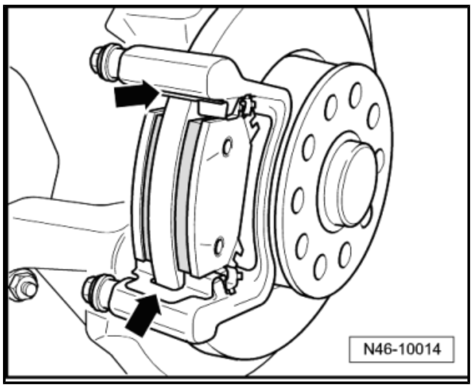
Before pushing back the piston, extract some of the brake fluid out of the brake fluid reservoir using a bleeder bottle. Otherwise, especially if reservoir has been topped off, fluid will overflow and cause damage.

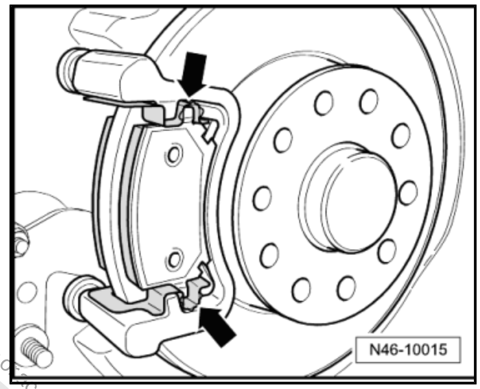
- Install pistons at knurled wheel on - T 10165 - by turning toward right. Do not damage protective caps.
- Use special tool 10165/1 for assistance when installing.

♦ For pistons that are difficult to move, an open-end wrench (size 13 mm) can be applied at the appropriate wrench surface -arrow A-.



– Insert brake pad retention plates -arrows- and brake pads in brake carrier.





– Make sure that the brake pads are located correctly in the anti-rattle springs -arrows-.

– Secure brake caliper using new self-locking bolts.

♦ The repair kit includes four self-locking hex bolts which must be installed in all cases.

– Install wheels.

Torque specification for wheel bolts, refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 44 ; Specifications .

Note

♦ *After replacing brake pads, depress brake pedal firmly several times with vehicle stationary so that the brake pads are properly seated in their normal operating position.*

♦ *Check brake fluid level after replacing brake pad.*

Tightening Specifications:	
Hex bolt, brake caliper to brake carrier ♦ Use new bolts!	35 Nm

3.2.4 Brake Caliper, CII 38

Special tools and workshop equipment required

♦ Torque Wrench 5-50 Nm - V.A.G 1331-

♦ Brake Pedal Actuator - V.A.G 1869/2-

Removing

Note

Work procedure applies only for replacing or when performing subsequent service work on brake caliper.

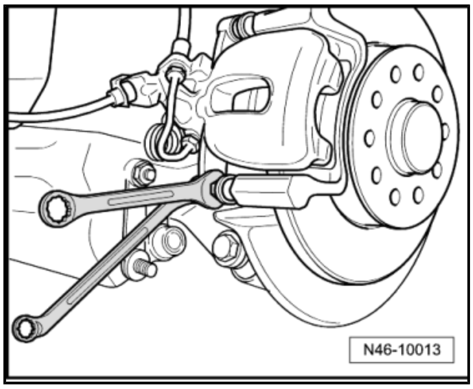
– Remove the wheels.

– Unhook the brake cable from the lever on the brake caliper.

– Remove the spring clip and pull the brake cable from the holder on the brake caliper.

– Connect bleeder hose of bleeder bottle to bleeder valve of brake caliper and then open bleeder valve.

– Insert -V.A.G 1869/2- .



- Close bleeder valve and remove bleeder bottle.
- Remove the brake line.
- Remove both bolts from brake caliper, counter hold on guide pin when doing this.
- Pull off brake caliper from brake carrier.

Installing

- Piston is pressed back.
- Brake pads sit in retaining springs on the brake carrier.
- Secure brake caliper on brake carrier using new self-locking bolts.
- Screw brake line on brake caliper.
- Bleed brake system, refer to ⇒ “1.1 Brake System, Bleeding”, page 107
- Hook in the brake cable and secure it to the holder with the spring clip.
- Adjusting the parking brake, refer to ⇒ “1.5 Parking Brake, Adjusting”, page 68
- Install wheels.

Torque specification for wheel bolts, refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 44 ; Specifications .

Note

- *Before moving vehicle, depress brake pedal several times firmly to properly seat brake pads in their normal operating position.*
- *Check brake fluid level.*

Tightening Specifications:	
Hex bolt, brake caliper to brake carrier ♦ Use new bolts!	35 Nm
Brake line to brake caliper	14 Nm

3.2.5 Brake Pads, CII 41

Special tools and workshop equipment required

- Torque Wrench 5-50 Nm - V.A.G 1331-
- Piston Compressing and Extracting Tool - T 10165-

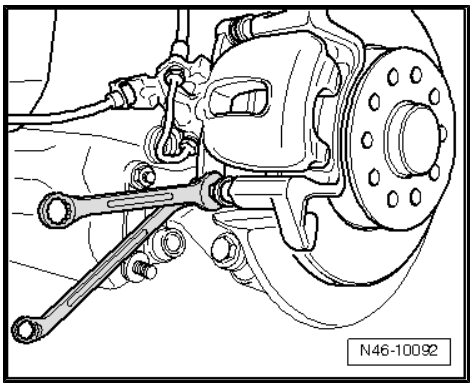
Removing

Note

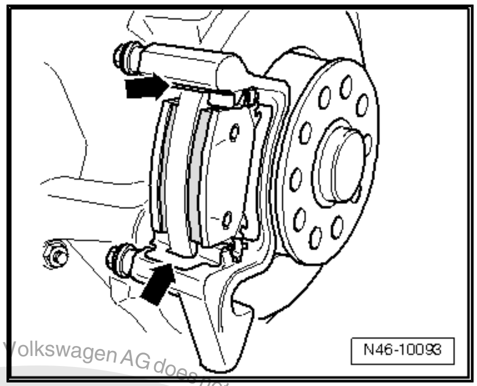
When removing, mark brake pads that will be used again. Install in the same position, otherwise braking effect will be uneven!

- Remove the wheels.

- Counter-hold guide pins and remove attachment bolts from brake caliper.
- Remove brake caliper and secure with wire so that the weight of the brake caliper does not burden or damage the brake hose.



- Remove brake pads and anti-rattle springs -arrows-.



Cleaning:

> ⚠ **WARNING**
>
> *Do not blow brake system using compressed air, the dust produced is harmful to health!*

- Contact surfaces between brake pads and brake carrier must be cleaned, remove corrosion.
- Clean brake caliper.

Note

Use only appropriate solvents for cleaning brake caliper.

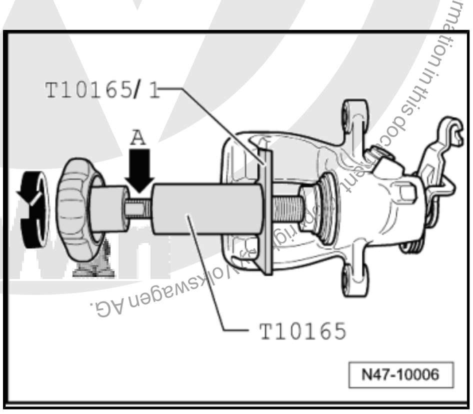
Installing

Note

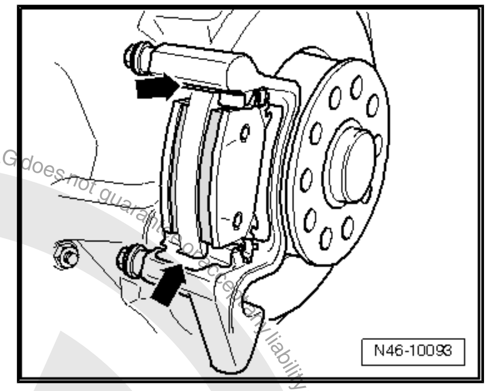
Before pushing back the piston, extract some of the brake fluid out of the brake fluid reservoir using a bleeder bottle. Otherwise, especially if reservoir has been topped off, fluid will overflow and cause damage.

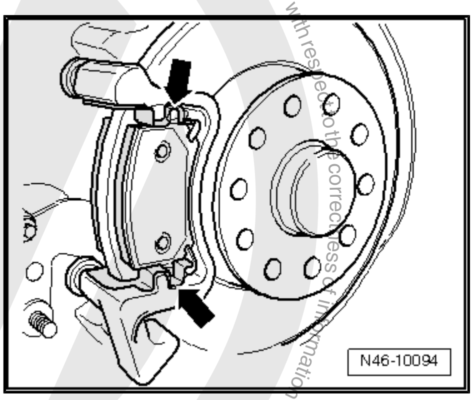
- Install pistons at knurled wheel on - T 10165 - by turning toward right. Do not damage protective caps.
- Use special tool 10165/1 for assistance when installing.

◆ For pistons that are difficult to move, an open-end wrench (size 13 mm) can be applied at the appropriate wrench surface -arrow A-.



- – Insert brake pad retention plates -arrows- and brake pads in brake carrier.





- – Make sure that the brake pads are located correctly in the anti-rattle springs -arrows-.
- – Secure brake caliper using new self-locking bolts.
- ♦ The repair kit includes four self-locking hex bolts which must be installed in all cases.
- – Install wheels.

Torque specification for wheel bolts, refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 44 ; Specifications .

Note

- ♦ *After replacing brake pads, depress brake pedal firmly several times with vehicle stationary so that the brake pads are properly seated in their normal operating position.*
- ♦ *Check brake fluid level after replacing brake pad.*

Tightening Specifications:	
Hex bolt, brake caliper to brake carrier ♦ Use new bolts!	35 Nm

3.2.6 Brake Caliper, CII 41

Special tools and workshop equipment required

- ♦ Torque Wrench 5-50 Nm - V.A.G 1331-
- ♦ Brake Pedal Actuator - V.A.G 1869/2-

Removing

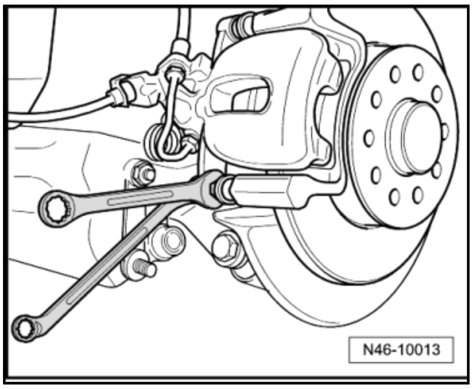
Note

Work procedure applies only for replacing or when performing subsequent service work on brake caliper.

- – Remove the wheels.
- – Unhook the brake cable from the lever on the brake caliper.
- – Remove the spring clip and pull the brake cable from the holder on the brake caliper.
- – Connect bleeder hose of bleeder bottle to bleeder valve of brake caliper and then open bleeder valve.
- – Insert -V.A.G 1869/2- .
- – Close bleeder valve and remove bleeder bottle.

– Remove the brake line.

– Remove both bolts from brake caliper, counter hold on guide pin when doing this.



– Pull off brake caliper from brake carrier.

Installing

- Piston is pressed back.
- Brake pads sit in retaining springs on the brake carrier.

– Secure brake caliper on brake carrier using new self-locking bolts.

– Screw brake line on brake caliper.

– Bleed brake system, refer to ⇒ “1.1 Brake System, Bleeding”, page 107 .

– Hook in the brake cable and secure it to the holder with the spring clip.

– Adjusting the parking brake, refer to ⇒ “1.5 Parking Brake, Adjusting”, page 68 .

– Install wheels.

Torque specification for wheel bolts, refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 44 ; Specifications .

Note

◆ *Before moving vehicle, depress brake pedal several times firmly to properly seat brake pads in their normal operating position.*

◆ *Check brake fluid level.*

Tightening Specifications:	
Hex bolt, brake caliper to brake carrier ◆ Use new bolts!	35 Nm
Brake line to brake caliper	14 Nm

3.2.7 Brake Pads, Bosch

Special tools and workshop equipment required

◆ Torque Wrench 5-50 Nm - V.A.G 1331-

◆ Resetting and Extracting Tool - T10165-

Removing

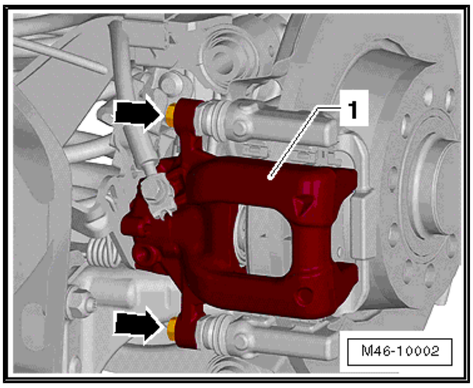
Note

When removing, mark brake pads that will be used again. Install in the same position, otherwise braking effect will be uneven!

– Loosen the rear wheels.

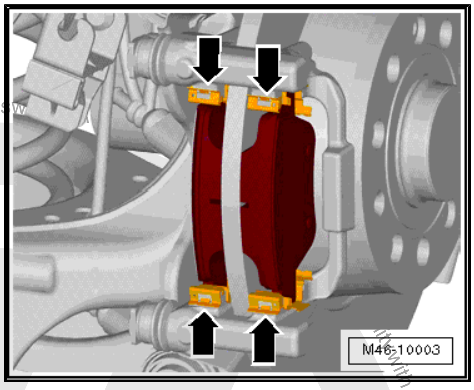
– Raise the vehicle.

– Remove rear wheels.



– counter hold the guide bolt and remove the bolts -arrows- from the brake caliper -1-.

– Remove brake caliper and secure with wire so that the weight of the brake caliper does not burden or damage the brake hose.



– Remove brake pads and anti-rattle springs -arrows-.

Cleaning:

WARNING

Do not blow brake system using compressed air, the dust produced is harmful to health!

– Contact surfaces between brake pad retaining plates (brake pads) and brake carrier must be cleaned and remove any corrosion.

– Clean brake caliper.

Note

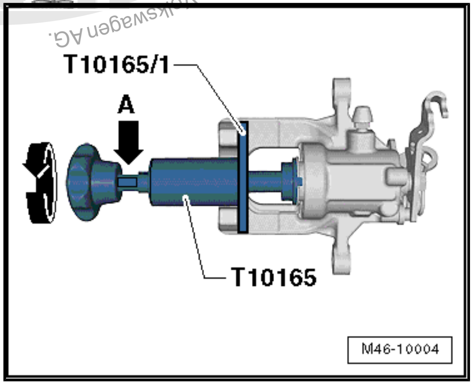
Use only appropriate solvents for cleaning brake caliper.

Installing

Install in reverse order of removal. Note the following:

Note

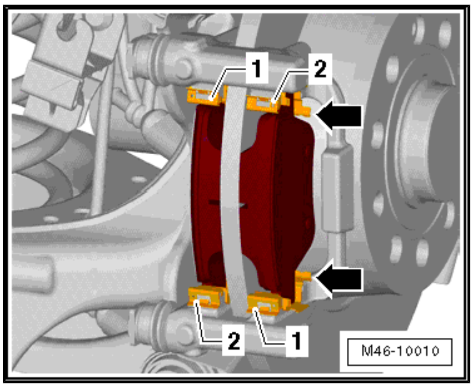
Before pushing back the piston, extract some of the brake fluid out of the brake fluid reservoir using a bleeder bottle. Otherwise, especially if reservoir has been topped off, fluid will overflow and cause damage.



– Turn the thumbwheel on the -T10165- to the right and install the piston. Be careful not to damage the cap.

– Use the plate - T10165/1- to help you bolt it on.

- Install the -T10165- so that the collar on the -T10165/1- is touching.
- For pistons that are difficult to move, an open-end wrench (size 13 mm) can be applied at the appropriate wrench surface -arrow A-.



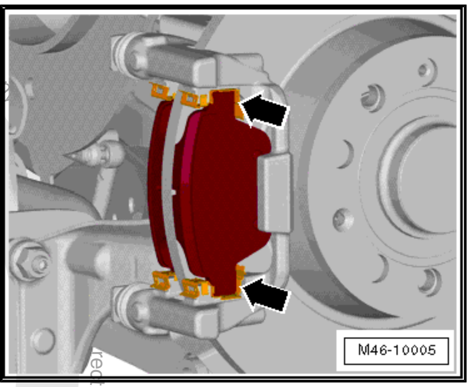
– Insert the brake pad retaining plates -1- and -2- in the brake carrier.

Note

The brake pad retaining plates -1- and -2- are different. They can only be installed diagonally to each other.

– Install the brake pad retaining plates -1- and -2- so that the guides -arrows- on both sides of the brake carrier face out.

– Insert brake pads in brake carrier.



– Make sure the brake pads are seated in the brake pad retaining plates -arrows-.

– Secure brake caliper using new self-locking bolts.

– Install the wheels and tighten them, refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 44 ; Specifications .

Note

♦ *The repair kit has 4 self-locking screws for installing the brake caliper. Always use these.*

♦ *After replacing brake pads, depress brake pedal firmly several times with vehicle stationary so that the brake pads are properly seated in their normal operating position.*

♦ *Check brake fluid level after replacing brake pad.*

Tightening Specification

Component	Tightening Specification
Brake caliper to brake carrier ♦ Use new bolts!	35 Nm

3.2.8 Brake Caliper, Bosch

Special tools and workshop equipment required

♦ Torque Wrench 5-50 Nm - V.A.G 1331-

♦ Brake Pedal Actuator - V.A.G 1869/2-

Removing

Note

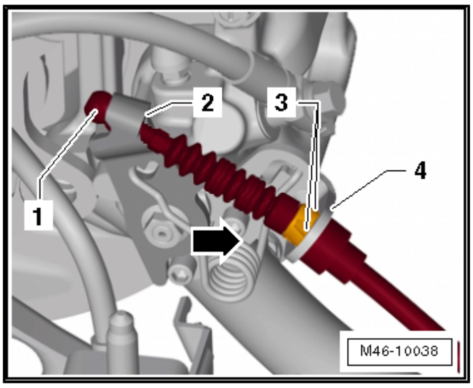
Work procedure applies only for replacing or when performing subsequent service work on brake caliper.

– Loosen the rear wheels.

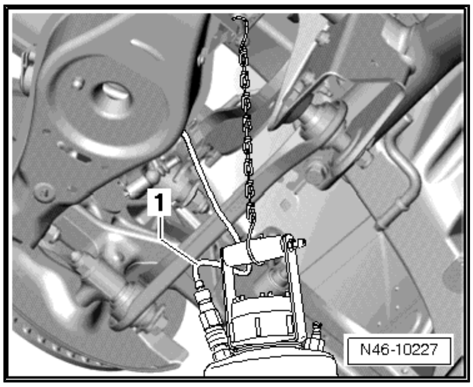
– Raise the vehicle.

– Remove rear wheels.

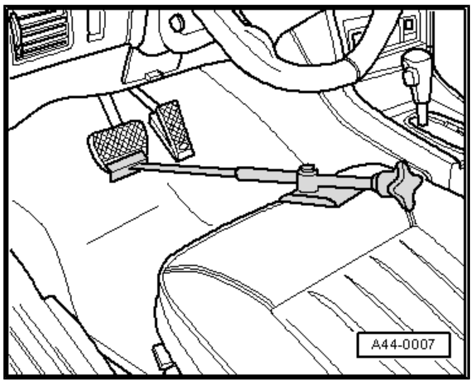
- Push the lever on the brake caliper -2- in -direction of arrow-.
- Disengage the parking brake cable -1- from the lever on the brake caliper -2-.
- Squeeze the tabs -3- and remove the parking brake cable -1- from the bracket -4- on the brake caliper.



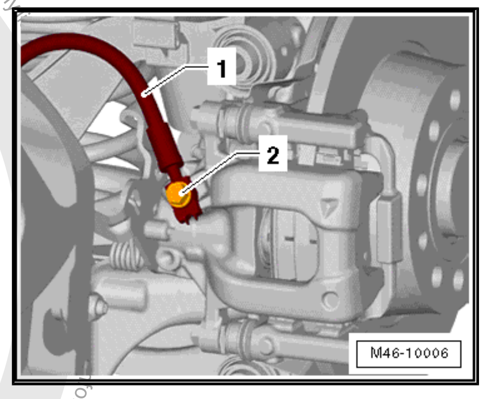
- Connect the bleed hose -1- from the bleeder bottle to the brake caliper bleed valve and open the bleed valve.



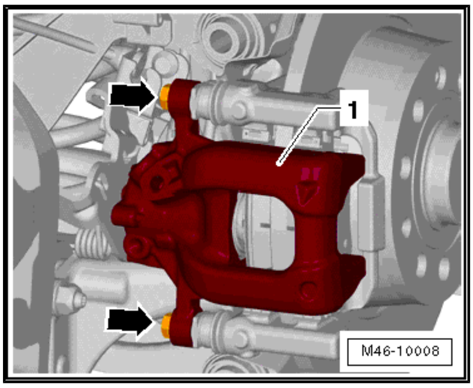
- Insert -V.A.G 1869/2- .
- Close the bleed valve and remove the bleeder bottle.



- Remove the brake hose connection -1- and the banjo bolt -2- from the brake caliper.



- counter hold the guide bolt and remove the bolts -arrows- from the brake caliper -1-.
- Remove the brake caliper from the brake carrier.

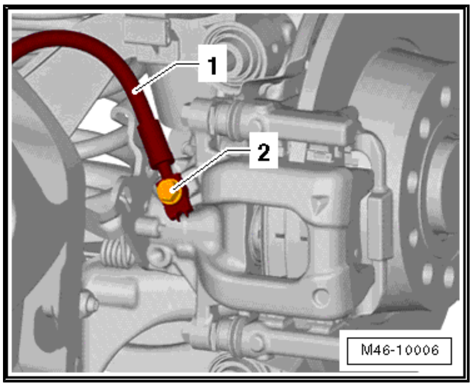


Installing

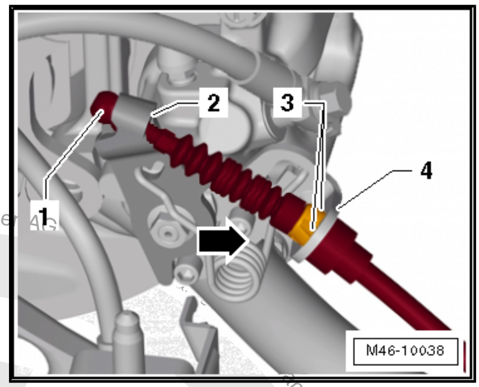
Install in reverse order of removal. Note the following:

- Piston is pressed back.
- Brake pads sit in retaining springs on the brake carrier.
- Secure brake caliper on brake carrier using new self-locking bolts.

- Attach the brake hose -1- and banjo bolt -2- to the brake caliper.
- Remove -V.A.G 1869/2- .



- Guide the parking brake cable -1- through the bracket -4- on the brake caliper until the tabs -3- engage.
- Push the lever on the brake caliper -2- in -direction of arrow-.
- Attach the parking brake cable -1- to the lever -2- on the brake caliper.
- Bleed the brake system, refer to ⇒ “1.1 Brake System, Bleeding”, page 107 .
- Adjust parking brake, refer to ⇒ “1.5 Parking Brake, Adjusting”, page 68 .
- Install the wheels and tighten them, refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 44 ; Specifications .



Note

- *Before moving vehicle, depress brake pedal several times firmly to properly seat brake pads in their normal operating position.*
- *Check brake fluid level.*

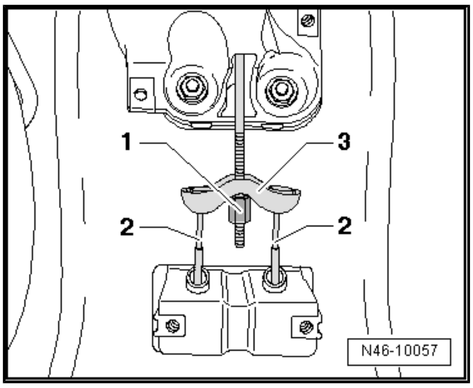
Tightening Specification

Component	Tightening Specification
Brake caliper to brake carrier ♦ Use new bolts!	35 Nm
Brake hose with banjo bolt on the brake caliper	35 Nm

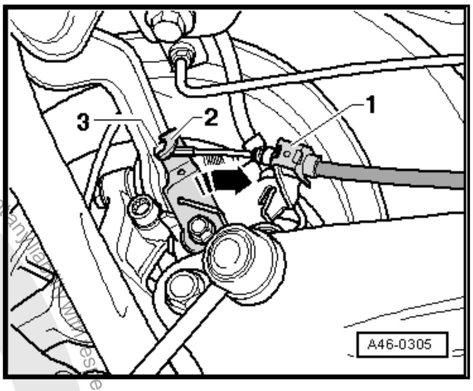
3.3 Parking Brake Cable, to MY 2007

Removing

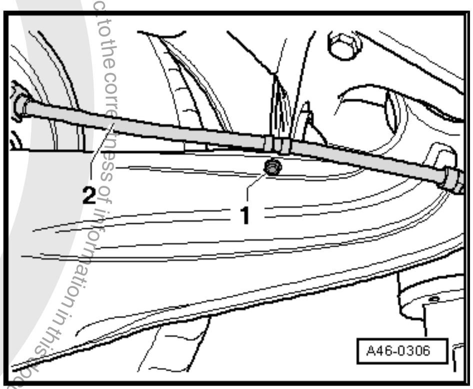
- Release parking brake.
- Remove center console, refer to “Storage Compartments, Covers and Trim” in ⇒ Body Interior; Rep. Gr. 68 ; Removal and Installation .
- Loosen adjustment nut -1- far enough until respective parking brake cable -2- can be disengaged from compensator bracket -3-.



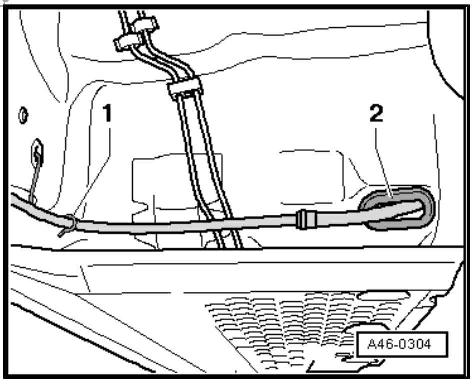
- Pry off spring clip -1-.
- Press lever on brake caliper -2- in direction of arrow and disengage brake cable -3-.



- Remove the TORX® bolt -1- and then loosen mounting clip from parking brake cable -2-.

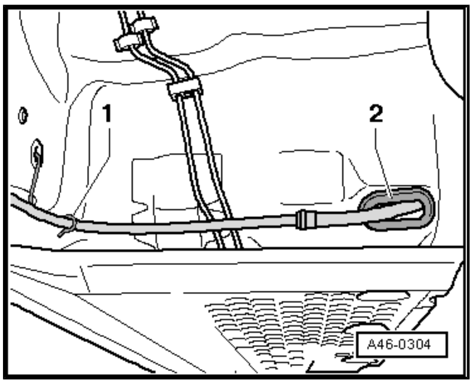


- Disengage parking brake cable from bracket -1- and pull hand brake cable out of guide tube -2-.

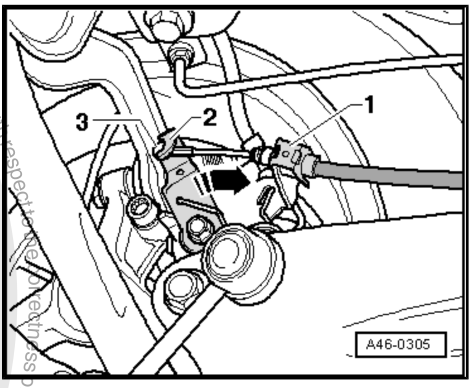


Installing

- Slide parking brake cable into guide tube -2- and engage it in bracket -1-.

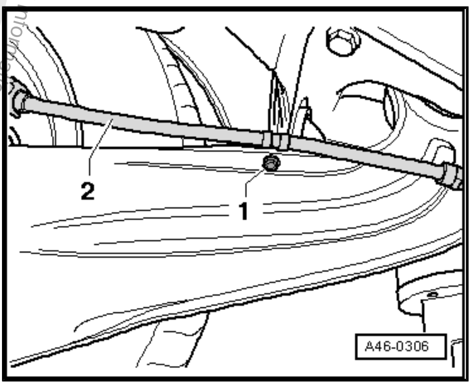


- Press the lever on brake caliper -2- in direction of arrow and hook in the brake cable -3-.
- Press spring clip -1- onto parking brake cable.

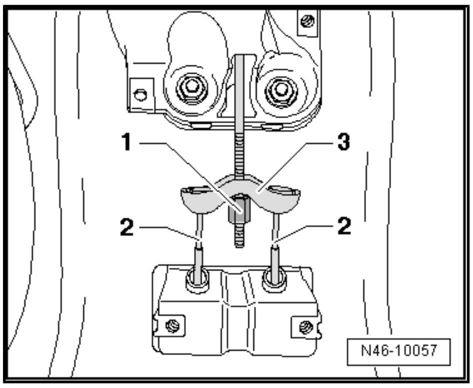


Parking brake cable -2- must be installed free of tension between bracket on brake caliper and mounting clip.

- Therefore, only now screw mounting clip -1- onto longitudinal control arm.



- Engage parking brake cable -2- into compensator bracket -3-.
- Pre-load parking brake cable using adjustment nut -1-.
- Adjust the parking brake, refer to ⇒ “1.5 Parking Brake, Adjusting”, page 68 .

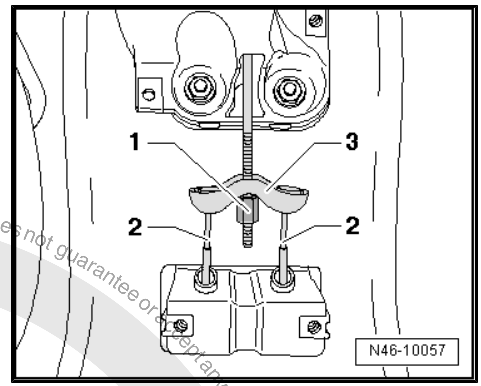


3.4 Parking Brake Lever, from MY 2008

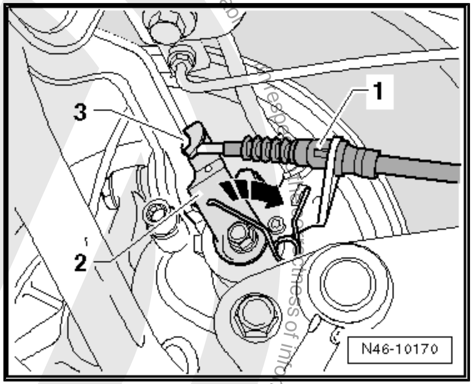
Removing

- Release parking brake.
- Remove center console , refer to “Storage Compartments, Covers and Trim” in ⇒ Body Interior; Rep. Gr. 68 ; Removal and Installation .

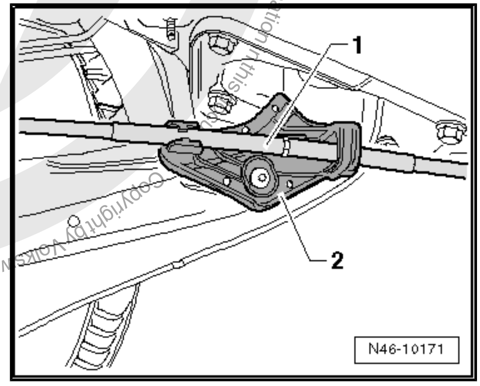
- Loosen adjustment nut -1- far enough until respective parking brake cable -2- can be disengaged from compensator bracket -3-.



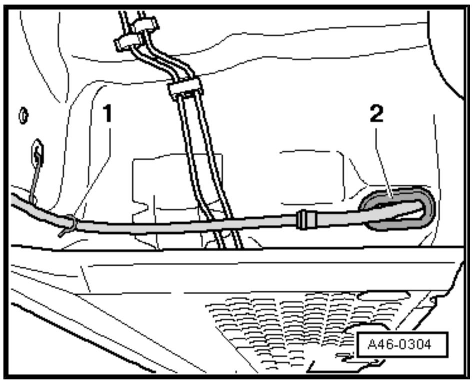
- Press lever on brake caliper -2- in direction of arrow and disengage brake cable -3-.
- Press the retaining tabs together -1- and remove the parking brake cable from the bracket on the brake caliper.



- Remove the parking brake cable -1- from the clamping tabs first and then completely from the bracket -2-.

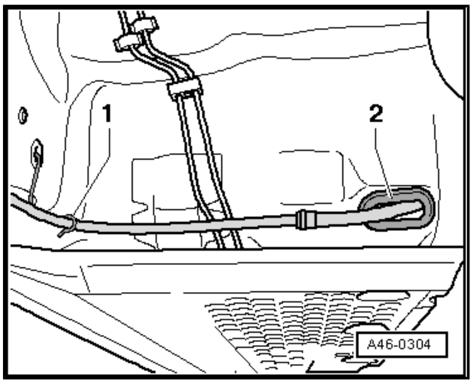


- Disengage parking brake cable from bracket -1- and pull hand brake cable out of guide tube -2-.

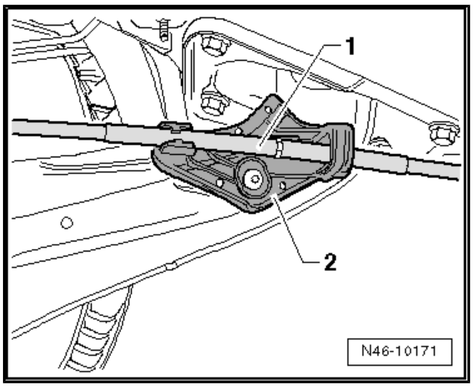


Installing

- Slide parking brake cable into guide tube -2- and engage it in bracket -1-.

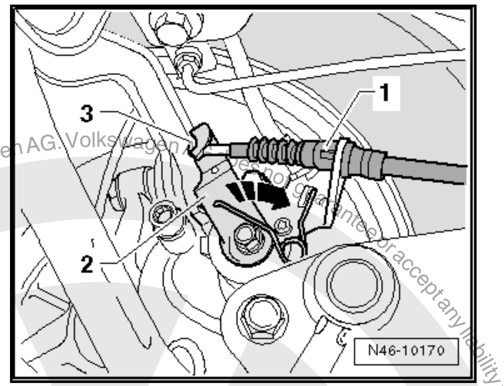


- Insert the parking brake cable -1- through the opening and then clamp it on the bracket -2-.

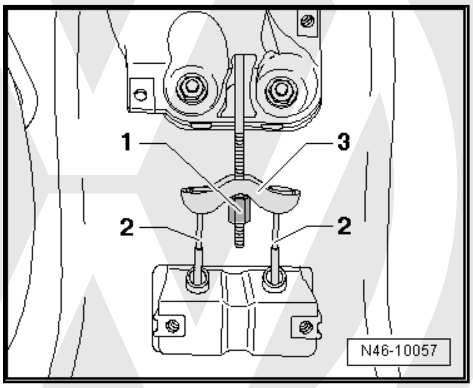


- Press the parking brake cable through the bracket on the brake caliper until both retaining tabs -1- engage.
- Press the lever on brake caliper -2- in direction of arrow and hook in the brake cable -3-.

The parking brake cable must be installed without tension between the bracket on the brake caliper and the bracket on the trailing arm.



- Engage parking brake cable -2- into compensator bracket -3-.
- Pre-load parking brake cable using adjustment nut -1-.
- Adjust the parking brake, refer to ⇒ “1.5 Parking Brake, Adjusting”, page 68 .



3.5 Brake Pedal, Separating from Brake Booster

Special tools and workshop equipment required

- ♦ Release tool - T 10159-

- Remove trim on driver side, refer to “Door Trim Panels” in ⇒ Body - Interior; Rep. Gr. 70 ; Removal and Installation .

Only on vehicles with brake light switch on mounting bracket:

- Disconnect connector from brake light switch.
- Remove brake light switch by turning 45° to left.

Procedure for all vehicles:

- First press brake pedal in direction of brake booster and hold.

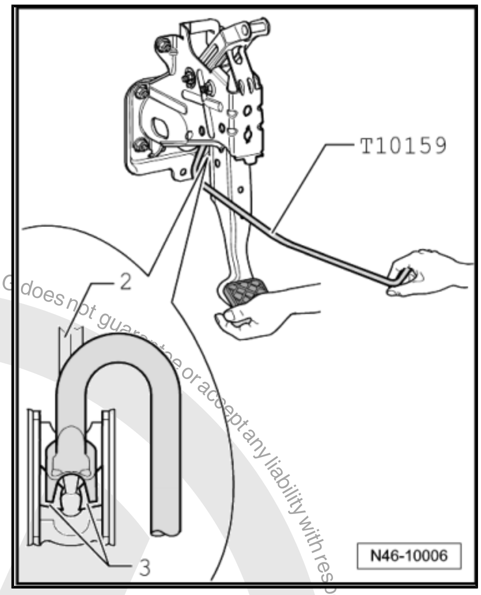
2 - Pressure Rod

3 - Retaining Lugs

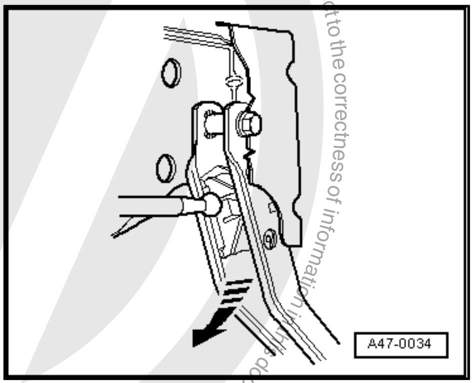
- Insert -T 10159- and pull in direction of driver seat. When doing this, counter-hold on brake pedal. (At this moment the pedal must not be allowed to move backward). The mounting retaining lugs -3- will thereby be pressed off the ball head of the push rod -2-.

For ease of illustration separating the brake pedal from the brake booster is shown with the pedal assembly removed.

- Pull -T 10159- and brake pedal together toward the driver seat. (This will pull the brake pedal off the push rod ball head).



Brake Pedal and Brake Booster, Connecting



- Hold ball head of push rod in front of mounting and push brake pedal in direction of brake booster, so the ball head engages audibly.

Install in reverse order of removal.

Only on vehicles with brake light switch on mounting bracket:

- Brake lamp switch, installing, refer to ⇒ “3.6 Brake Lamp Switch F , through 04 November 2005”, page 102 .

3.6 Brake Lamp Switch - F- , through 04 November 2005

⇒ “3.6.1 Brake Lamp Switch, Previous Version”, page 102

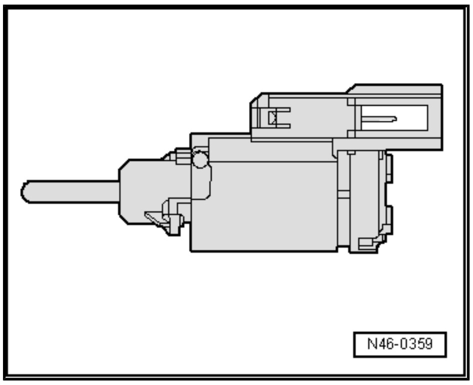
⇒ “3.6.2 Brake Lamp Switch, New Version”, page 104

3.6.1 Brake Lamp Switch, Previous Version

Includes Brake Pedal Switch - F47-

On vehicles from CW 45/05, brake light switch is located on brake master cylinder, refer to ⇒ “2.3 Brake Booster and Master Cylinder Overview”, page 117 .

Brake Lamp Switch, Previous Version



Note

- *After removing the old brake light switch (see illustration N46-0359) it should be replaced with a new one (see illustration N46-10145).*
- *Distinguishing characteristics, see ⇒ page 104 .*

Removing

- – Remove trim on driver side, refer to “Door Trim Panels” in ⇒ Body - Interior; Rep. Gr. 70 ; Removal and Installation .
- – If necessary, remove the footwell vents, refer to “Vents” in ⇒ Heating, Air-Conditioning; Rep. Gr. 80 ; Removal and Installation .
- – Disconnect connector from brake light switch.

The brake lamp switch must only be removed when plunger is pressed (brake pedal not operated), otherwise the retainer on the brake light switch will be damaged.

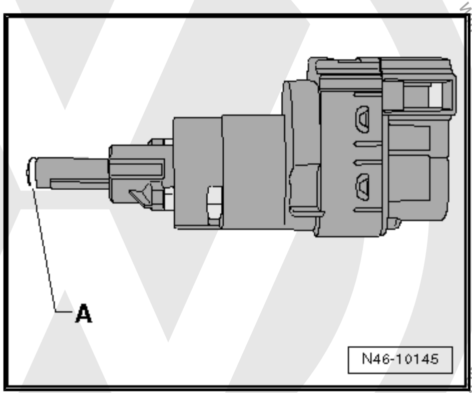
- – Remove brake light switch by turning 45° to left.

Installing, Adjusting and Locking

Because the old brake lamp switch is no longer used, there is no description here.

3.6.2 Brake Lamp Switch, New Version

Brake Lamp Switch, New Version



Note

- *Only use new brake light switches.*
- *The most noticeable difference is the new brake light switch has a clear rounded end on the plunger head -A-.*

Removing

– Remove trim on driver side, refer to “Door Trim Panels” in ⇒ Body - Interior; Rep. Gr. 70 ; Removal and Installation .

– If necessary, remove the footwell vents, refer to “Vents” in ⇒ Heating, Air-Conditioning; Rep. Gr. 80 ; Removal and Installation .

– Disconnect connector from brake light switch.

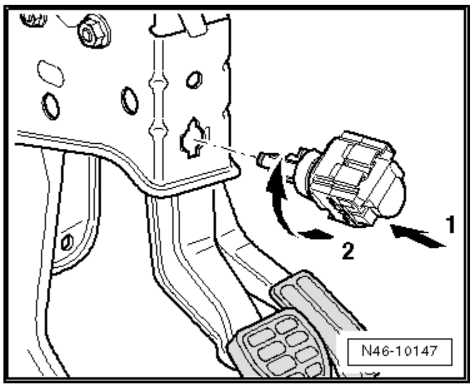
The brake lamp switch must only be removed when plunger is pressed (brake pedal not operated), otherwise the retainer on the brake lamp switch will be damaged.

– Remove brake lamp switch by turning 45° to left.

Installing, Adjusting and Locking

Before installing the brake lamp switch, grease the clear rounded end on the plunger head with polycarbamide grease G 052 142 A2.

- When installing brake lamp switch, brake pedal must always remain in rest position. The brake pedal may only be touched with the brake lamp switch plunger head during the entire assembly procedure.



– Guide the brake lamp switch through assembly opening -arrow 1- and press it against the pedal with the plunger head. Then turn the brake lamp switch 45° to the right -arrow 2-, until it noticeably engages.

– Connect brake light switch connector.

– Check function of brake light.

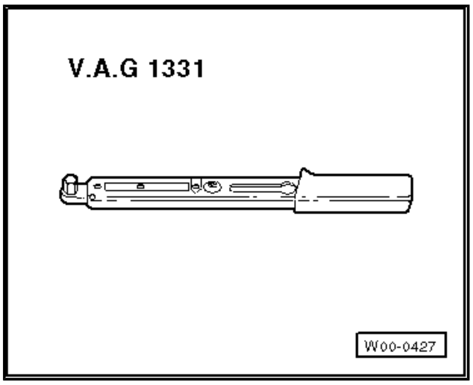
– Install footwell vent, refer to “Vents” in ⇒ Heating, Air-Conditioning; Rep. Gr. 80 ; Removal and Installation .

– Install trim on driver side, refer to “Door Trim Panels” in ⇒ Body - Interior; Rep. Gr. 70 ; Removal and Installation .

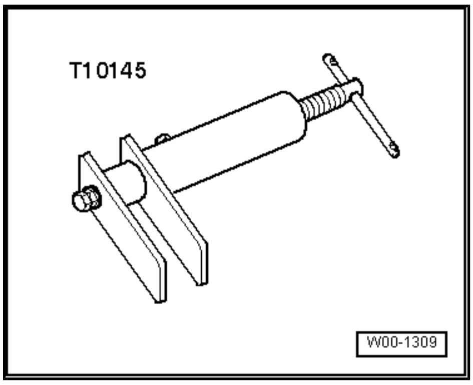
4 Special Tools

Special tools and workshop equipment required

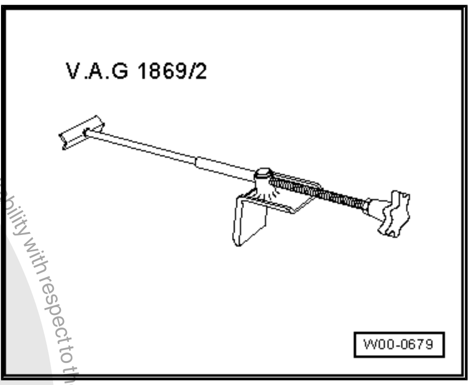
- ♦ Torque Wrench 5-50 Nm - V.A.G 1331-


V.A.G 1331
W00-0427

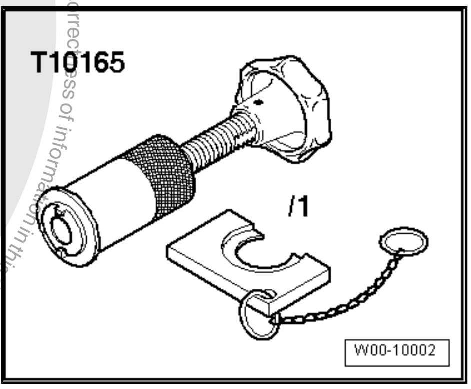
- ♦ Piston resetting tool - T 10145-


T10145
W00-1309

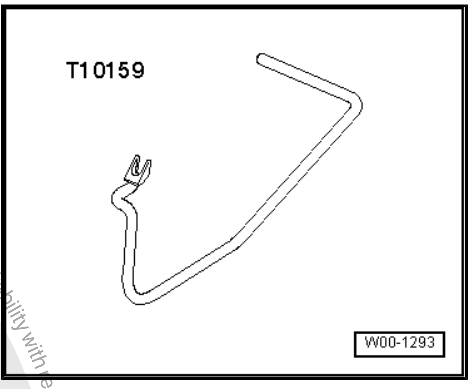
- ♦ Brake Pedal Actuator - V.A.G 1869/2-


V.A.G 1869/2
W00-0679

- ♦ Resetting and Extracting Tool - T 10165-


T10165
/1
W00-10002

- Release tool - T 10159-



- Ring Spanner Insert AF 21 - T10035-

47 – Hydraulic Components

1 General Information

⇒ “1.1 Brake System, Bleeding”, page 107

⇒ “1.2 Bleeding Brake System with Brake Charger/Bleeder Unit VAS 5234 or V.A.G 1869 ”, page 107

⇒ “1.3 Brake Fluid, Changing”, page 109

⇒ “1.4 Rear Brake Caliper, Servicing”, page 109

⇒ “1.5 Brake Caliper, Pre-Bleeding”, page 110

1.1 Brake System, Bleeding

Description covers bleeding of brake system using the brake charger/bleeder unit - VAS 5234- and -V.A.G 1869- .

Note

- *Bleeding the braking system on vehicles with ABS is carried out as for vehicles with conventional braking systems.*
- *Only use new brake fluid conforming to US-Norm FMVSS 116 DOT 4.*
- *Genuine VW/Audi brake fluid conforms to this specification.*
- *Brake fluid is poisonous. Due to its caustic nature, it must also never be brought into contact with paint.*
- *Brake fluid is hygroscopic, meaning that it absorbs moisture from the surrounding air, and must therefore be stored in air-tight containers.*
- *Rinse off spills, by using plenty of water.*

Note

There must be a positive pressure of 2 bar to bleed the hydraulic unit.

1.2 Bleeding Brake System with Brake Charger/Bleeder Unit - VAS 5234- or - V.A.G 1869-

Special tools and workshop equipment required

- Brake Charger/Bleeder Unit - VAS 5234-
- or
- Brake Charger/Bleeder Unit - V.A.G 1869-
- Brake Charger/Bleeder Unit Suction Adapter - V.A.G 1869/4-
- Tool Set for Brake Bleeding - VAS 6564-

Note

On vehicles with EDL, EDL/ASR or EDL/ASR/ESP, the brake system must be pre-bled when a chamber in the brake fluid reservoir is completely empty (for example brake system leaking).

Pre-Bleeding

– Connect -VAS 5234- or -V.A.G 1869- .

Bleeding sequence:

1 - Bleed left front and right front brake caliper together simultaneously.

2 - Bleed left rear and right rear brake caliper together simultaneously.

– With bleeder bottle hoses attached, leave bleeder valves open long enough that brake fluid exits without bubbles.

Then the hydraulic unit must be bled again with the “Basic setting” function using the -VAS 5051- .

Initiate basic setting (to bleed brake system):

-VAS 5051- , connecting and selecting functions, refer to ⇒ “2.1 Vehicle Diagnostic Tester Connecting and Selection Functions”, page 13 .

– Then, brake system must be bled normally.

Bleeding

Note

Adhere strictly to work sequence when bleeding brake system.

– Connect brake filling and bleeding tool - VAS 5234- or - V.A.G 1869- .

– Open bleeder valves in the prescribed sequence and bleed brake caliper.

1- Front left brake caliper

2 - Right front brake caliper

3 - Left rear brake caliper

4 - Right rear brake caliper

Note

Use suitable bleeder hose. It must seat tightly on bleed screw so that no air can enter brake system.

– With bleeder bottle hose attached, leave bleeder valve open long enough that brake fluid exits without bubbles.

Post-Bleeding

Note

- *Perform a post-bleeding when:*
- *The brake pedal travel is too long, or the so-called soft brake pedal.*

A second technician is required during the post-bleeding.

- Depress brake pedal forcefully and hold.
- Open bleeder valve at brake caliper.
- Press brake pedal down onto stop.
- Close bleeder valve with pedal depressed.
- Release brake pedal slowly.

Note

This bleeding procedure must be performed 5 times per brake caliper.

Bleeding sequence:

1- Front left brake caliper

2 - Right front brake caliper

3 - Left rear brake caliper

4 - Right rear brake caliper

Note

A road test must be performed after bleeding. During this, at least one ABS regulation must be performed!

1.3 Brake Fluid, Changing

Refer to “Brake and Clutch System, Changing Brake Fluid” in ⇒ Maintenance Procedures; Rep. Gr. 03 ; Maintenance Procedures .

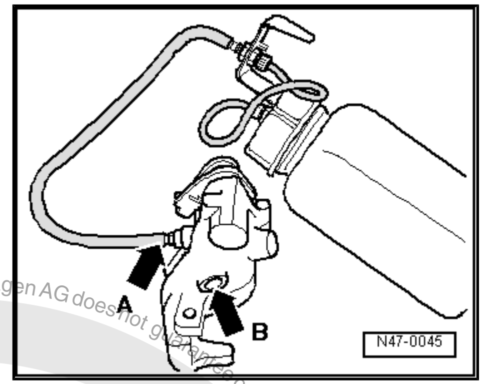
1.4 Rear Brake Caliper, Servicing

- Install complete repair kit when servicing.
- Only use mineral spirits to clean brake parts.
- New brake calipers are filled with brake fluid and are pre-bled.
- Apply thin coat of assembly paste G 052 150 A2 to brake cylinders, pistons and seals.
- In case of repair, brake calipers must always be pre-bled before being installed into vehicle (without brake pads), refer to ⇒ “1.5 Brake Caliper, Pre-Bleeding”, page 110 .

1.5 Brake Caliper, Pre-Bleeding

– Open bleeder valve -arrow A- and fill with brake fluid using standard bleeder bottle until brake fluid flows out of threaded hole (end of brake hose) -arrow B- without bubbles. Close bleeder screw.

Position brake caliper as shown during pre-bleed procedure.



2 Description and Operation

⇒ “2.1 Front Brakes”, page 111

⇒ “2.2 Rear Brakes”, page 114

⇒ “2.3 Brake Booster and Master Cylinder Overview”, page 117

⇒ “2.4 Brake Lines”, page 119

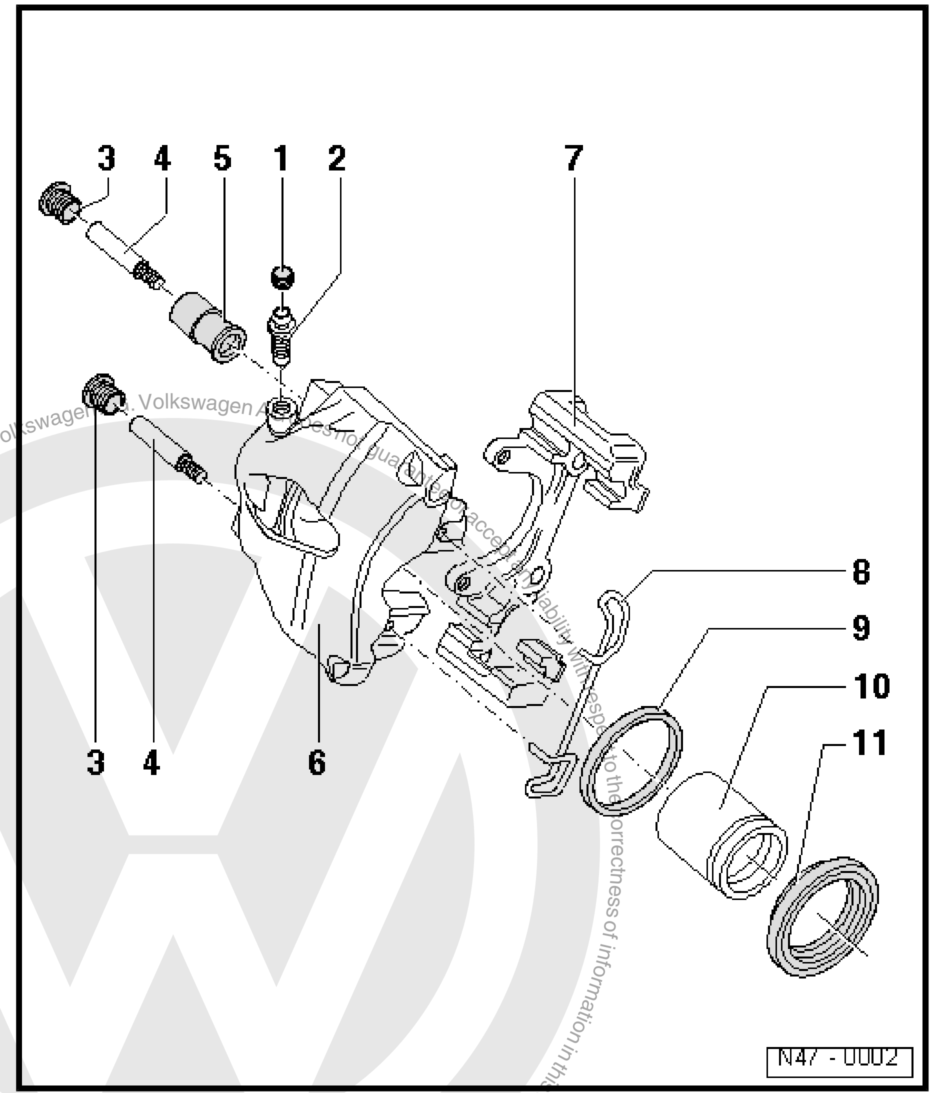
2.1 Front Brakes

⇒ “2.1.1 Brake Caliper Overview, FN 3 ”, page 111

⇒ “2.1.2 Brake Caliper Overview, FS III ”, page 112

⇒ “2.1.3 Brake Caliper Overview, FNR-G ”, page 113

2.1.1 Brake Caliper Overview, FN 3



1 - Dust Cap
- ☐ Install onto bleeder valve.

2 - Bleeder Valve
- ☐ 10 Nm
- ☐ Apply a thin coat of assembly paste G 052 150 A2 to the threads before screwing in.

3 - Caps
- ☐ Insert in bushing.

4 - Guide Pins
- ☐ 30 Nm

5 - Bearing Bushing
- ☐ Insert in brake caliper.

6 - Brake Caliper

7 - Brake Carrier
- ☐ Bolt to brake caliper.

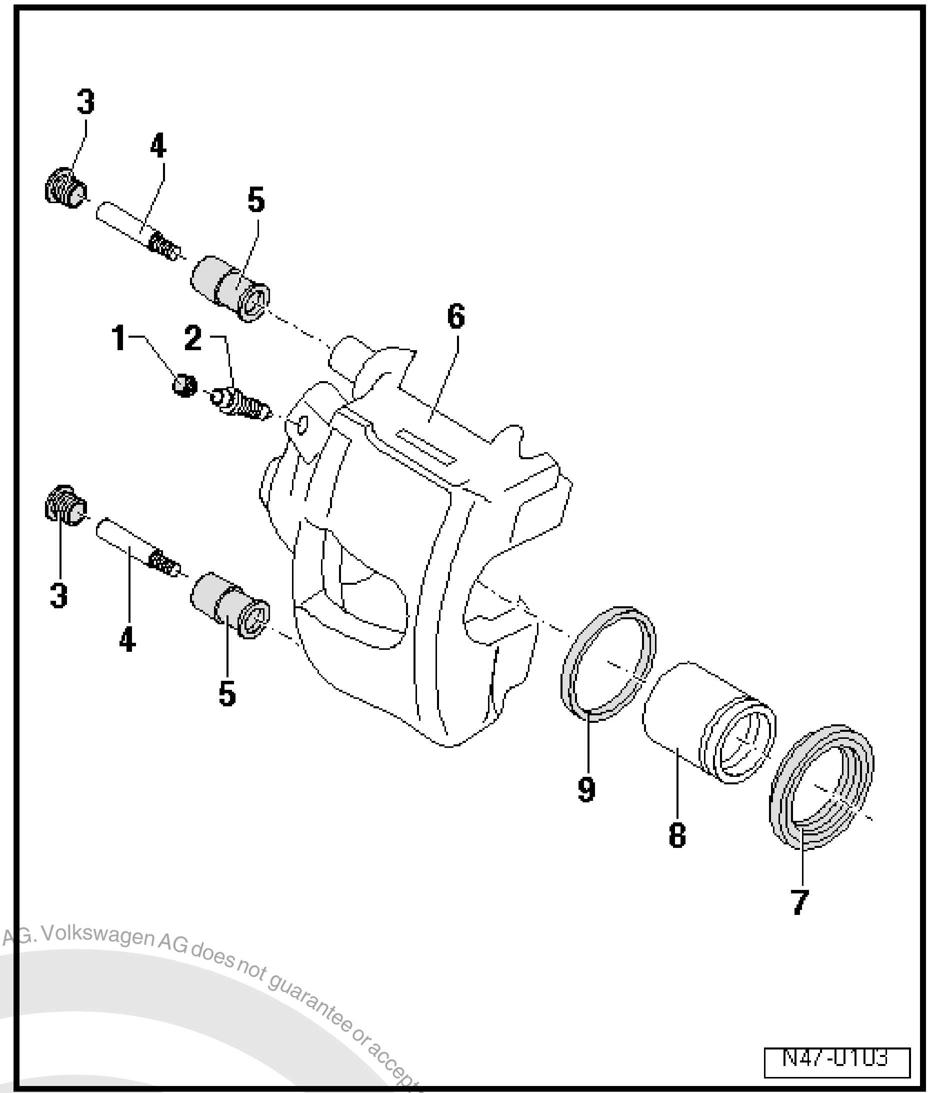
8 - Spring
- ☐ Insert with both ends in holes of brake caliper.

9 - Seal
- ☐ Removing and Installing, refer to ⇒ “5.1.2 Brake Caliper Piston, FN 3 ”, page 130 .

10 - Pistons
- ☐ Removing and Installing, refer to ⇒ “5.1.2 Brake Caliper Piston, FN 3 ”, page 130 .
- ☐ Apply thin coat of assembly paste G 052 150 A2 to piston before inserting.

11 - Cap
- ☐ Removing and Installing, refer to ⇒ “5.1.2 Brake Caliper Piston, FN 3 ”, page 130 .
- ☐ Do not damage when installing piston.

2.1.2 Brake Caliper Overview, FS III



1 - Dust Cap

- ☐ Install onto bleeder valve.

2 - Bleeder Valve

- ☐ 10 Nm
- ☐ Apply a thin coat of assembly paste G 052 150 A2 to the threads before screwing in.

3 - Caps

- ☐ Insert in bushing.

4 - Guide Pins

- ☐ 30 Nm

5 - Bearing Bushing

- ☐ Insert in brake caliper.

6 - Brake Caliper

7 - Cap

- ☐ Removing and Installing, refer to ⇒ “5.1.1 Brake Caliper Piston, FS III”, page 129 .
- ☐ Do not damage when installing piston.

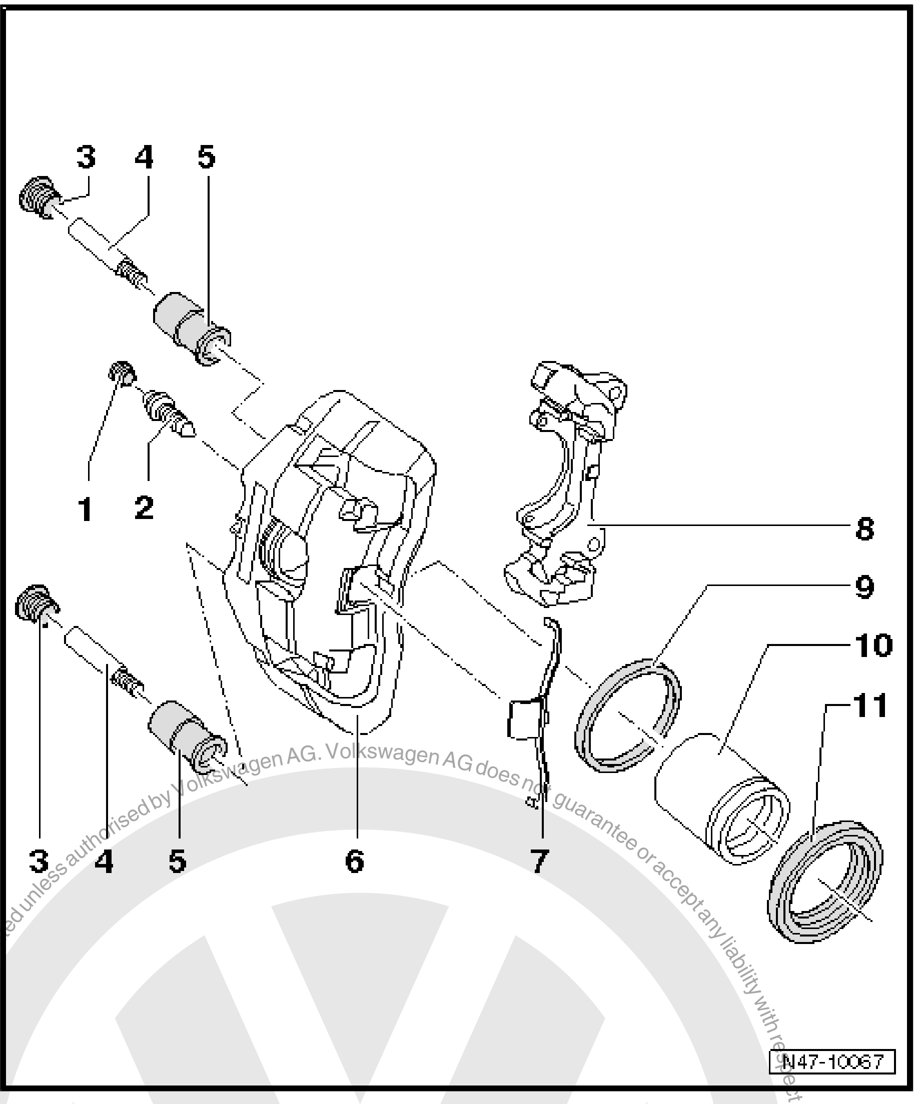
8 - Pistons

- ☐ Removing and Installing, refer to ⇒ “5.1.1 Brake Caliper Piston, FS III”, page 129 .
- ☐ Apply thin coat of assembly paste G 052 150 A2 to piston before inserting.

9 - Seal

- ☐ Removing and Installing, refer to ⇒ “5.1.1 Brake Caliper Piston, FS III”, page 129 .

2.1.3 Brake Caliper Overview, FNR-G



1 - Dust Cap
- ❏ Install onto bleeder valve.

2 - Bleeder Valve
- ❏ 12 Nm
- ❏ Apply a thin coat of assembly paste G 052 150 A2 to the threads before screwing in.

3 - Caps
- ❏ Insert in bushing.

4 - Guide Pins
- ❏ 30 Nm

5 - Bearing Bushing
- ❏ Insert in brake caliper.

6 - Brake Caliper
- ❏ Must not be separated from each other.

7 - Spring
- ❏ Insert in brake pad retaining spring and press below brake carrier.

8 - Brake Carrier
- ❏ Bolt to brake caliper.

9 - Seal
- ❏ Removing and Installing, refer to ⇒ “5.1.3 Brake Caliper Piston, FNR-G ”, page 132 .

10 - Pistons
- ❏ Removing and Installing, refer to ⇒ “5.1.3 Brake Caliper Piston, FNR-G ”, page 132 .
- ❏ Apply thin coat of assembly paste G 052 150 A2 to piston before inserting.

11 - Cap
- ❏ Removing and Installing, refer to ⇒ “5.1.3 Brake Caliper Piston, FNR-G ”, page 132 .
- ❏ Do not damage when installing piston.

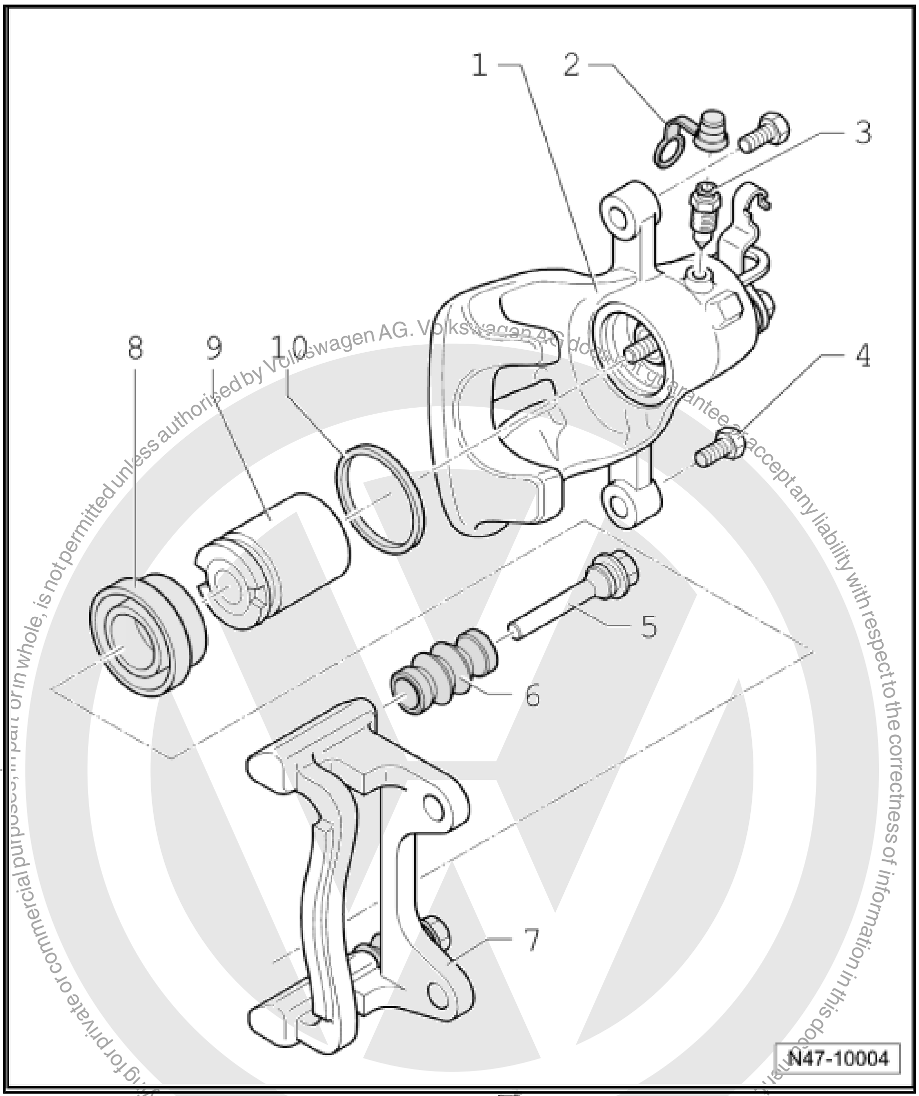
2.2 Rear Brakes

⇒ “2.2.1 Brake Caliper Overview, CI 38 and CII 38”, page 114

⇒ “2.2.2 Brake Caliper Overview, CII 41 ”, page 115

⇒ “2.2.3 Brake Caliper Overview, Bosch”, page 116

2.2.1 Brake Caliper Overview, CI 38 and CII 38



1 - Brake Caliper with Parking Brake Cable Lever

- ☐ Replace brake caliper if leaking at parking brake cable lever.
- ☐ Pre-bleed brake caliper after repairing, refer to ⇒ “1.5 Brake Caliper, Pre-Bleeding”, page 110 .

2 - Dust Cap

3 - Bleeder Valve

- ☐ 10 Nm
- ☐ Apply a thin coat of assembly paste G 052 150 A2 to the threads before screwing in.

4 - Self-Locking Bolt

- ☐ 35 Nm
- ☐ Replace
- ☐ When loosening and tightening, counter-hold at guide pin.

5 - Guide Pins

- ☐ Grease before pulling on protective cap.

6 - Cap

- ☐ Install on brake carrier and guide pin.

7 - Brake Carrier with Guide Pins and Cap

- ☐ CII 38 brake illustration.
- ☐ Supplied as an assembled replacement part with sufficient grease on guide pins.
- ☐ If protective caps or guide pins are damaged, install repair kit. Use supplied grease packet to lubricate guide pins.

8 - Cap

- ☐ Pull onto piston with outer sealing lip.
- ☐ Removing and Installing, refer to ⇒ “5.2.1 Brake Caliper Piston”, page 134 .

9 - Piston with Automatic Adjustment

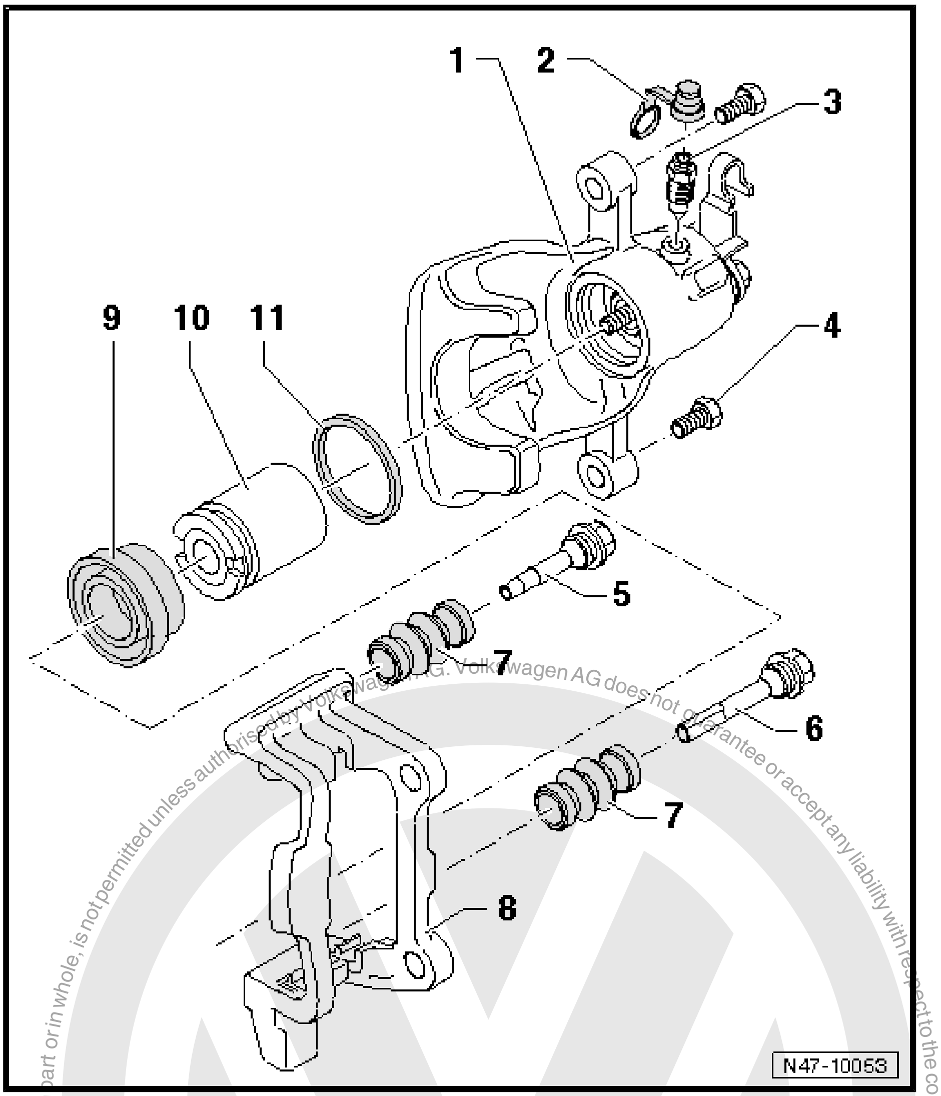
- ☐ Removing and Installing, refer to ⇒ “5.2.1 Brake Caliper Piston”, page 134 .
- ☐ Apply thin coat of assembly paste G 052 150 A2 to piston before inserting.

10 - Seal

- ☐ Removing and Installing, refer to ⇒ “5.2.1 Brake Caliper Piston”, page 134 .

2.2.2 Brake Caliper Overview, CII 41

15 inch from calendar week 32/04



1 - Brake Caliper with Parking Brake Cable Lever

- ☐ Replace brake caliper if leaking at parking brake cable lever.
- ☐ Pre-bleed brake caliper after repairing, refer to ⇒ “1.5 Brake Caliper, Pre-Bleeding”, page 110 .

2 - Dust Cap

3 - Bleeder Valve

- ☐ 10 Nm
- ☐ Apply a thin coat of assembly paste G 052 150 A2 to the threads before screwing in.

4 - Self-Locking Bolt

- ☐ 35 Nm
- ☐ Replace
- ☐ When loosening and tightening, counter-hold at guide pin.

5 - Guide Pin with Stepping

- ☐ Shorter than item 6.
- ☐ Grease before pulling on protective cap.

6 - Guide Pins

- ☐ Longer than item 5.
- ☐ Grease before pulling on protective cap.

7 - Cap

- ☐ Install on brake carrier and guide pin.

8 - Brake Pad with Damper

- ☐ Supplied as an assembled replacement part with sufficient grease on guide pins.
- ☐ If protective caps or guide pins are damaged, install repair kit. Use supplied grease packet to lubricate guide pins.

9 - Cap

- ☐ Pull onto piston with outer sealing lip.
- ☐ Removing and Installing, refer to ⇒ “5.2.1 Brake Caliper Piston”, page 134 .

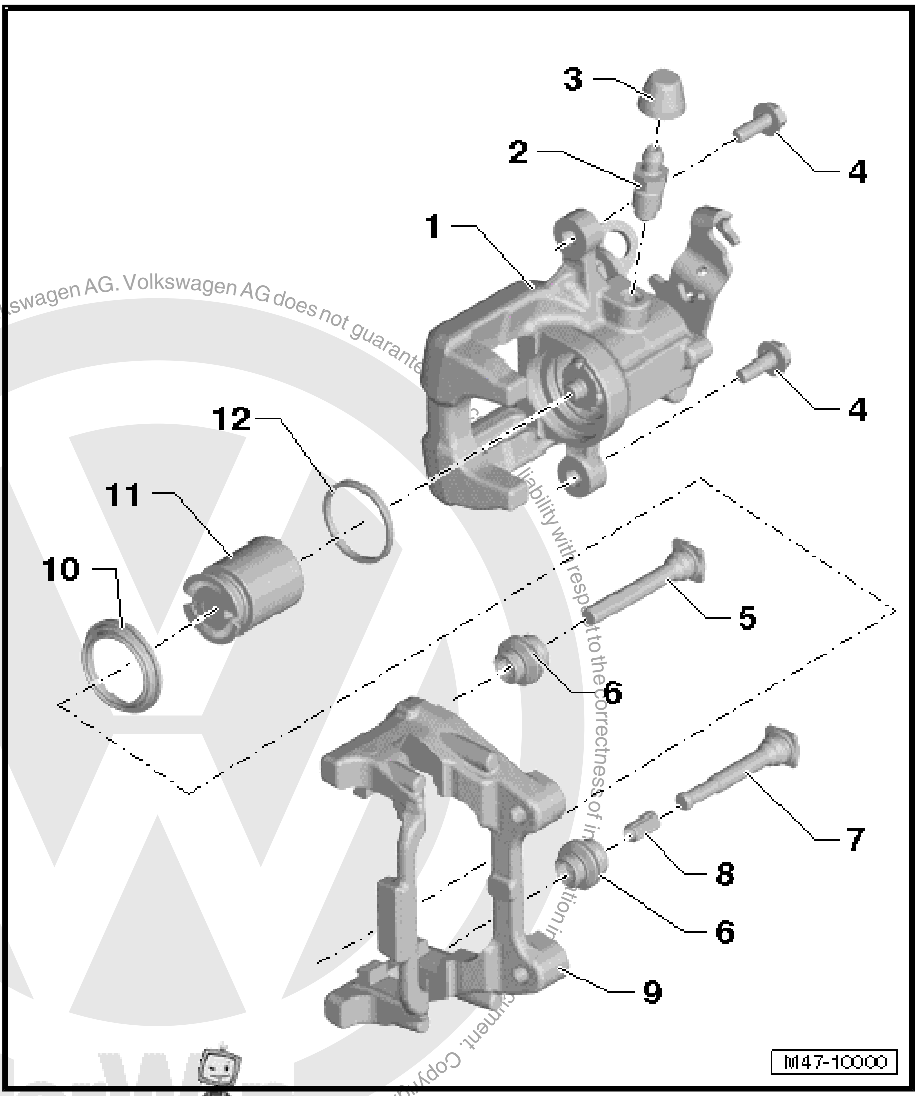
10 - Piston with Automatic Adjustment

- ☐ Removing and Installing, refer to ⇒ “5.2.1 Brake Caliper Piston”, page 134 .
- ☐ Apply thin coat of assembly paste G 052 150 A2 to piston before inserting.

11 - Seal

- ☐ Removing and Installing, refer to ⇒ “5.2.1 Brake Caliper Piston”, page 134 .

2.2.3 Brake Caliper Overview, Bosch



1 - Brake Caliper with Parking Brake Cable Lever

- ❑ Replace brake caliper if leaking at parking brake cable lever.
- ❑ Bleed the brake caliper after servicing, refer to ⇒ “1.5 Brake Caliper, Pre-Bleeding”, page 110 .

2 - Bleeder Valve

- ❑ 10 Nm
- ❑ Apply a thin coat of assembly paste - G 052 150 A2- to the threads before installing.

3 - Dust Cap

4 - Self-Locking Bolt

- ❑ 35 Nm
- ❑ Replace
- ❑ When loosening and tightening, counter-hold at guide pin.

5 - Upper Guide Pins

- ❑ Grease before pulling on protective cap.

6 - Cap

- ❑ Install on brake carrier and guide pin.

7 - Lower Guide Pins

- ❑ With recess.
- ❑ Grease before pulling on protective cap.

8 - Guide Grommet

- ❑ On the lower guide pin.

9 - Brake Carrier

- ❑ Supplied as an assembled replacement part with sufficient grease on guide pins.
- ❑ If protective caps or guide pins are damaged use repair kit. Use supplied grease packet to lubricate guide pins.

10 - Cap

- ❑ Pull onto piston with outer sealing lip.
- ❑ Removing and Installing, refer to ⇒ “5.2.2 Brake Caliper Piston, Bosch”, page 135 .

11 - Piston with Automatic Adjustment

- ❑ Removing and Installing, refer to ⇒ “5.2.2 Brake Caliper Piston, Bosch”, page 135 .
- ❑ Apply thin coat of assembly paste - G 052 150 A2- to the piston.

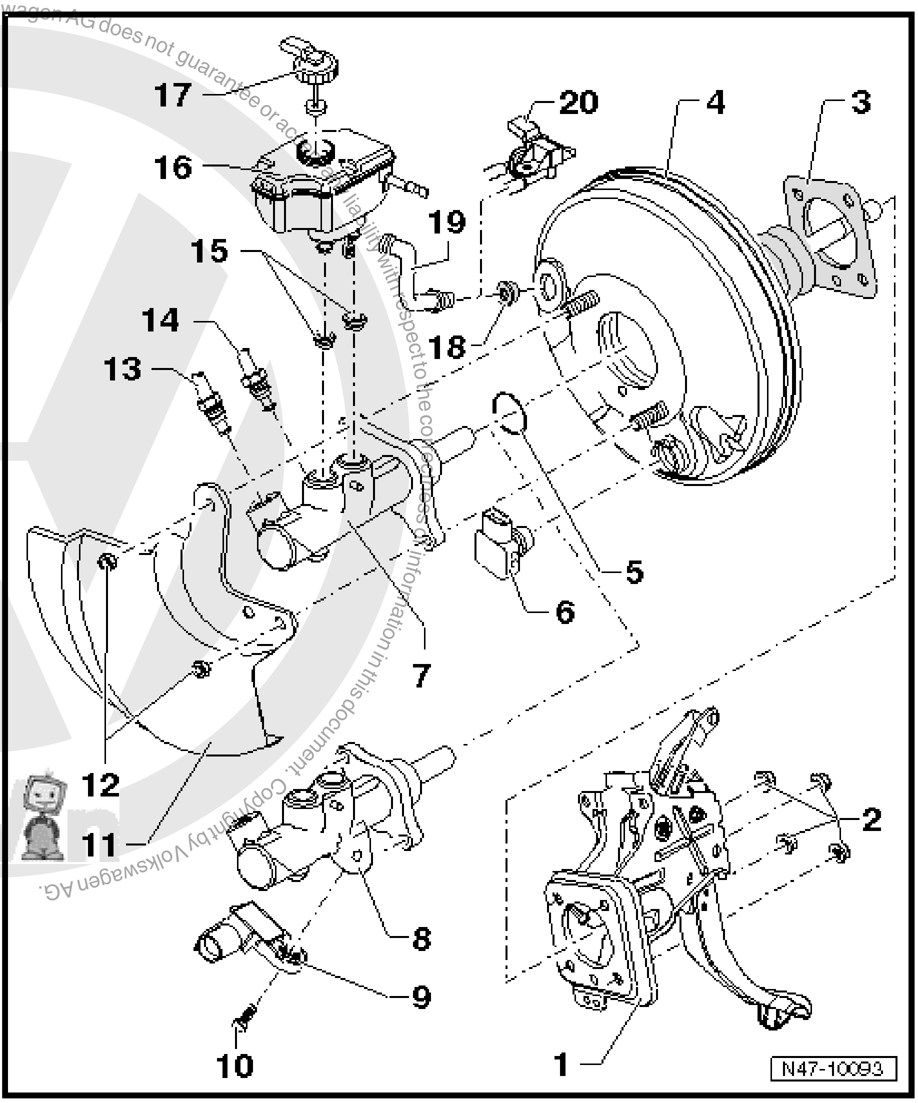
12 - Seal

- ❑ Removing and Installing, refer to ⇒ “5.2.2 Brake Caliper Piston, Bosch”, page 135 .

2.3 Brake Booster and Master Cylinder Overview

Note

Use only new brake fluid. Observe information on brake fluid reservoir!



1 - Pedal Assembly

2 - Self-Locking Nut

- ☐ 25 Nm
- ☐ Always replace if removed.

3 - Gasket

- ☐ For brake booster

4 - Brake Booster

- ☐ On gasoline engines, vacuum is supplied from intake manifold.
- ☐ Some vehicles with gasoline engine and automatic transmission are equipped with a Brake System Vacuum Pump - V192- , refer to ⇒ “5.3 Brake System Vacuum Pump V192 ”, page 137 .
- ☐ On vehicles with a hydraulic brake booster, a vacuum sensor is installed, refer to ⇒ “4.9 Brake Booster Vacuum Sensor G483 ”, page 48
- ☐ Functional check:
  - – With engine switched off, depress brake pedal firmly several times (to deplete vacuum in tool).
  - – Depress and hold brake pedal with average foot pressure and start engine. If brake booster is working properly, pedal will be felt to give noticeably under foot (booster assistance becomes effective).
- ☐ Replace completely if there are malfunctions (check the vacuum system for the brake booster first; refer to ⇒ “4.2 Brake Booster Vacuum System, Checking”, page 125).
- ☐ Removing and Installing, refer to ⇒ “5.7 Brake Booster”, page 139 .

5 - Seal

6 - Brake Booster Vacuum Sensor - G483-

- ☐ Only on vehicles with the hydraulic brake booster.
- ☐ Removing and Installing, refer to ⇒ “4.9 Brake Booster Vacuum Sensor G483 ”, page 48 .

7 - Brake Master Cylinder without Brake Lamp Switch

- ☐ Allocation, refer to the Parts Catalog.

- ☐ Cannot be serviced. Replace as complete unit if malfunctioning.
- ☐ Removing and Installing, refer to ⇒ “5.6 Master Brake Cylinder”, page 138 .

8 - Brake Master Cylinder with Brake Lamp Switch

- ☐ Allocation, refer to the Parts Catalog.
- ☐ Cannot be serviced. Replace as complete unit if malfunctioning.
- ☐ Removing and Installing, refer to ⇒ “5.6 Master Brake Cylinder”, page 138 .

9 - Brake Lamp Switch - F-

- ☐ Includes brake pedal switch - F47-
- ☐ On vehicles through calendar week 45/05, the brake lamp switch - F- is located on the brake pedal, refer to ⇒ “1.4 Brake Pedal Overview”, page 67 .
- ☐ Removing and Installing, refer to ⇒ “5.5 Brake Lamp Switch F 07 November 2005”, page 138 .

10 - Inner TORX® Bolt

- ☐ 5 Nm

11 - Heat Shield

12 - Self-Locking Nut

- ☐ 25 Nm
- ☐ Always replace if removed.

13 - Brake Line

- ☐ 14 Nm
- ☐ Master brake cylinder/secondary piston circuit to hydraulic unit.

14 - Brake Line

- ☐ 14 Nm
- ☐ Master brake cylinder/primary piston circuit to hydraulic control unit.

15 - Sealing Plug

- ☐ Moisten with brake fluid and press into brake fluid reservoir.

16 - Brake Fluid Reservoir

17 - Cap

18 - Sealing Plug

- ☐ Connection for vacuum hose.

19 - Vacuum Hose

- ☐ Insert into brake booster.

20 - Brake Booster Pressure Sensor - G294-

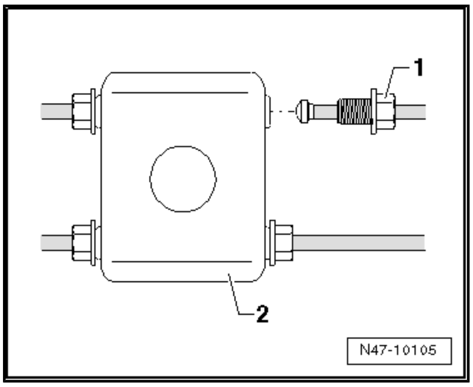
- ☐ On vehicles with FSI engine without Hydraulic Brake Vacuum Booster.
- ☐ Removing and Installing, refer to ⇒ “5.4 Brake Booster Pressure Sensor G294 ”, page 137 .

2.4 Brake Lines

⇒ “2.4.1 Brake Lines Separating Point, Underbody”, page 119

⇒ “2.4.2 Brake Lines, Repairing”, page 119

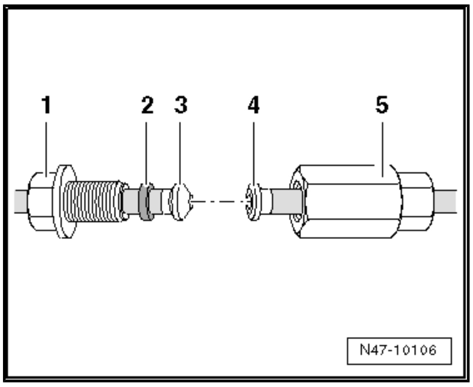
2.4.1 Brake Lines Separating Point, Underbody



Old Connection

1 - Tube fitting, 14 Nm

2 - Connection, counter hold while tightening.



New Connection

1 - Tube fitting, 14 Nm

2 - Ring

3 - Flare F

4 - Flare E, not flareable.

5 - Nut, counter hold when tightening.

2.4.2 Brake Lines, Repairing

Flare brake lines with 5 mm outer diameter using -VAS 6056- without damaging coating. In this way, brake lines can be inexpensively partially replaced in certain cases.

Work with brake line kit V.A.G. 1356 is not permitted because of the coating and diameter of black brake lines.

Note

- *Brake lines must not be bent more than 90°, otherwise they kink or deform causes unacceptable constriction in the line.*
- *Disconnect brake lines preferably at vehicle floor.*
- *Position of intermediate pieces should be selected so that they cannot rub against moving parts.*
- *Do not lubricate spindle, clean only with mineral spirits.*

Special tools and workshop equipment required

- Flaring Tool - VAS 6056-
- Brake Charger/Bleeder Unit - VAS 5234-

Listing of individual tools:

1 - Flaring Appliance - VAS 6056/1-

- ❑ The flaring tool - VAS 6056/1- contains flaring jaws - VAS 6056/6-

2 - Tube Cutter - VAS 6056/2-

3 - Brake Line Shearing Tool - VAS 6056/3-

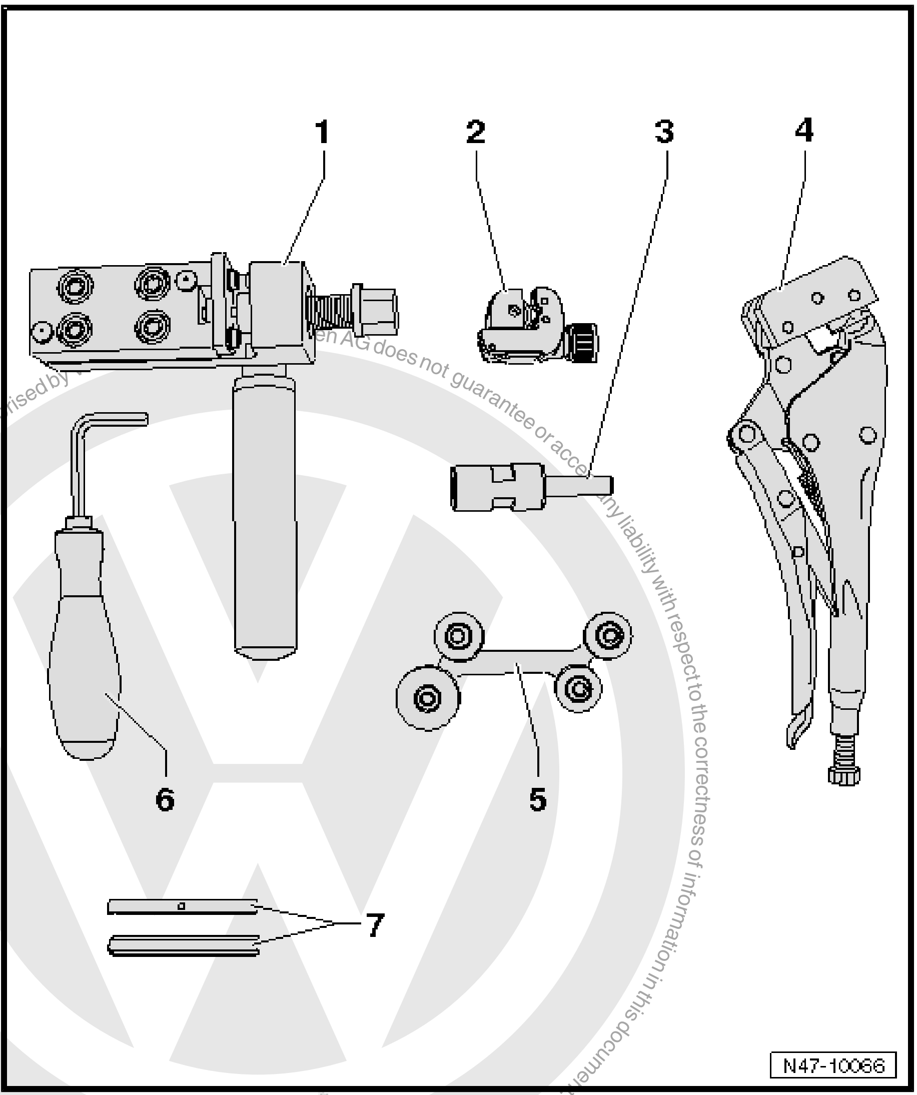
- ❑ The threaded pins (in shaft and at sides) are set and must not be adjusted!

4 - Self-Grip Pliers with Plastic Clamping Jaws - VAS 6056/4-

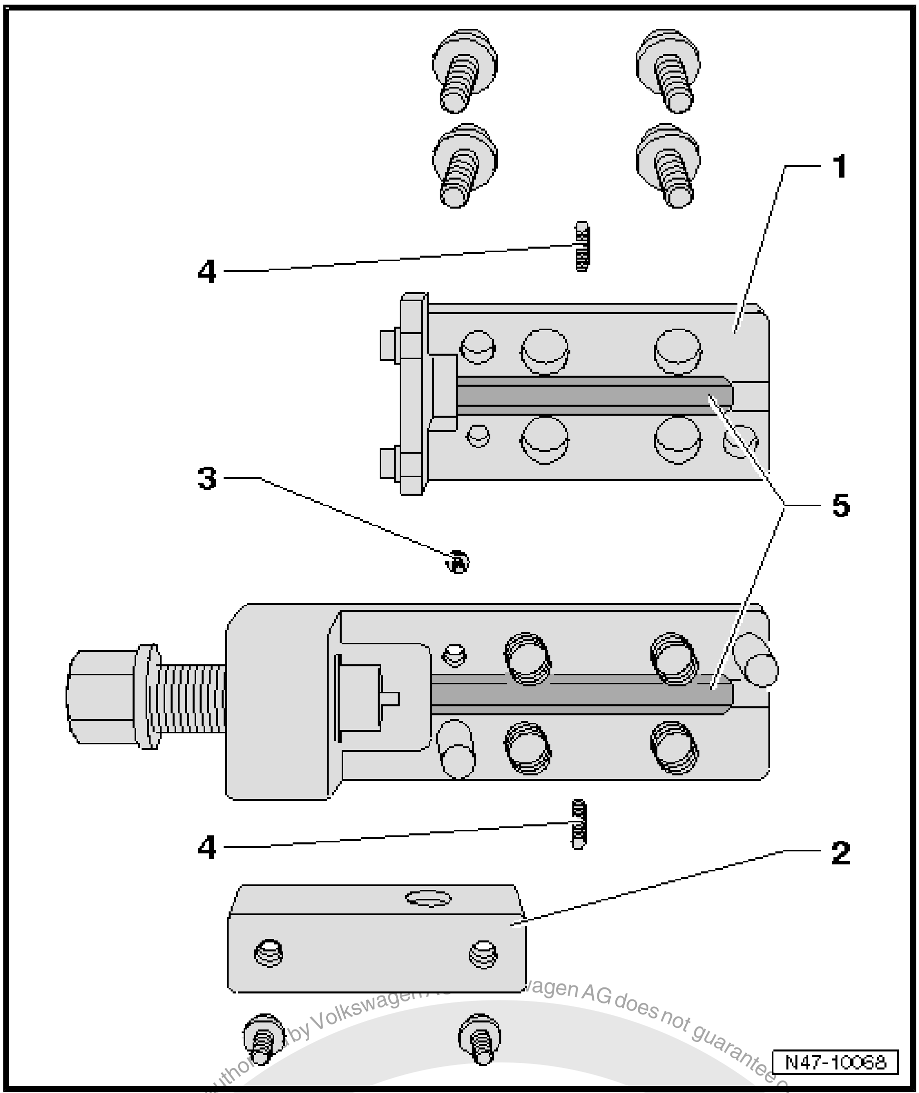
5 - Line Bending Tool - VAS 6056/5-

6 - SW6 Angle Screwdriver

7 - FlaringJaws - VAS 6056/7-



Flaring Tool, Assembly Overview



1 - Upper Part of Flaring Tool

- ☐ Remove to change flaring jaws.

2 - Hand Grip Mount

- ☐ Must be removed to reach retaining screw for upper part.

3 - Retaining Screw

- ☐ For upper part of flaring tool.

4 - Flaring Jaws Threaded Pins

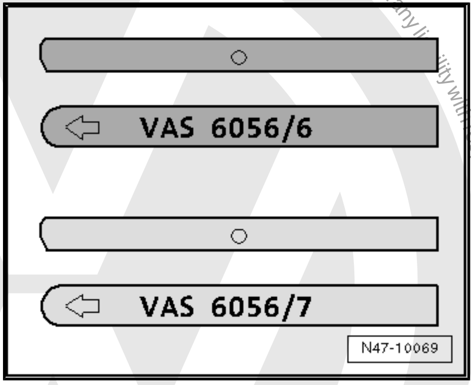
- ☐ Center and hold the flaring jaws.
- ☐ 2 mm hex socket head

5 - Flaring Jaws

- ☐ Various
- ☐ Assembly instructions ⇒ page 121

Flaring Jaws Assembly Instructions:

- ♦ VAS 6056/6 (dark) for black brake lines
- ♦ VAS 6056/7 (light) for green brake lines



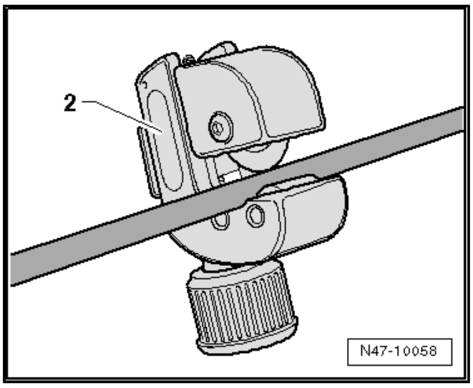
Note

The arrow on the rounded side of the flaring jaws must face toward edge of housing and the straight side of the flaring jaws must be installed toward spindle, otherwise flared head will not be formed correctly.

Instructions

– Remove affected brake line at brake caliper or wheel brake cylinder and collect escaping brake fluid and dispose of it correctly.

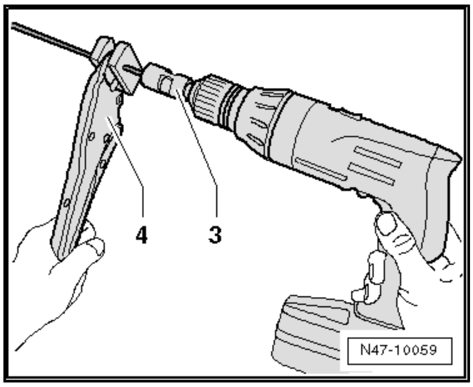
- Disconnect brake line at appropriate location (straight, accessible part) with line cutter -2-.
- Remove piece to be exchanged.
- Lubricate brake line surface.



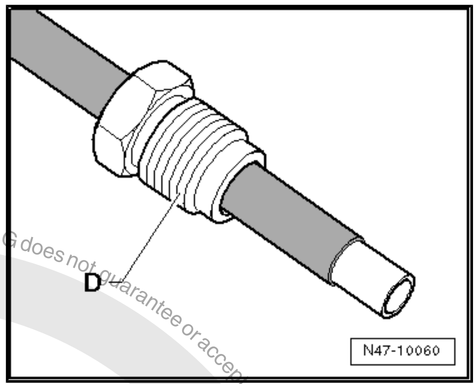
- Clamp brake line in self-grip pliers -4- so that 50mm of the plastic clamping jaws show.
- Clamp shearing tool -3- in a drill and place it on brake line.
- Shear coating from brake line at a slow drill RPM and with light pressure against the line.

The length of the sheared-off portion is determined by the stop in the shearing tool.

- Remove shearing tool from brake line and remove shearing remains.



- Remove self-grip pliers and tube fitting -D- from brake line.

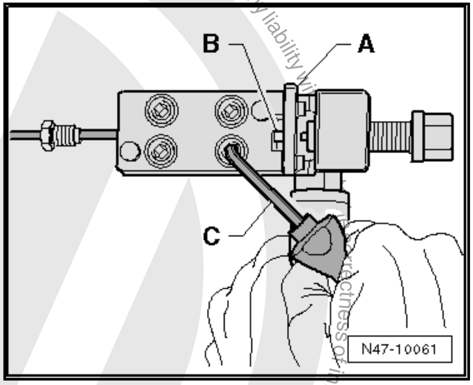


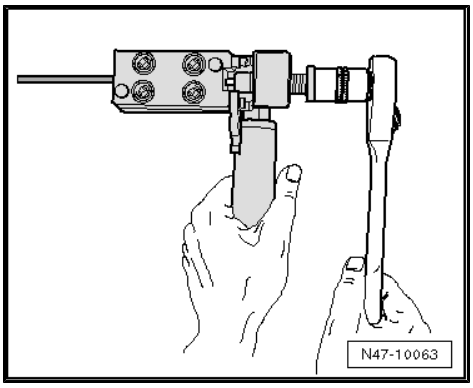
- Slide brake line -B- against stop -A- in flaring tool.

Note

Brake line must contact stop when hex socket heat screws are tightened, otherwise flared head will not be formed correctly.

- Clamp brake line in flaring tool until it cannot be moved any more. Fold stop -A- up and tighten hex socket head screws diagonally with angle screw driver -C-.

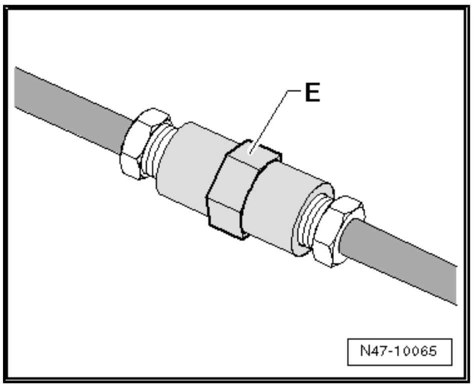




- Turn spindle to stop in flaring tool.
- Turn spindle back.
- Loosen hex socket head screws diagonally.
- Remove brake line from flaring tool, clean and check brake line and flared head.

Briefly rinse part of brake line remaining in vehicle.

- Connect -VAS 5234- , place bleeder container hose on flanged head of brake line and run -VAS 5234- briefly until some brake fluid runs through.
- Clean the brake line with compressed air.



- Join brake lines with connecting piece -E-.
- Assemble brake line.
- Bleed brake system, refer to ⇒ “1.1 Brake System, Bleeding”, page 107 .

3 Specifications

⇒ “3.1 Fastener Tightening Specifications”, page 124

3.1 Fastener Tightening Specifications

Component	Bolt Size	Nm
Front Brake Caliper		
Bleeder valve	-	10
Bleeder valve (FNR-G brake caliper only)	-	12
Guide pins	-	30
Rear Brake Caliper		
Bleeder valve	-	10
Brake caliper with parking brake cable lever[1]	-	35
Brake lamp switch	-	5
Bracket to automatic transmission	-	25
Brake Line	-	14
Brake system vacuum pump to bracket	-	8
Heat shield, nut[1]	-	25
Pedal assembly, nut[1]	-	25
• [1] Always replace		

4 Diagnosis and Testing

⇒ “4.1 Pressure Leak Test”, page 125

⇒ “4.2 Brake Booster Vacuum System, Checking”, page 125

⇒ “4.3 Check Valve , Checking”, page 128

4.1 Pressure Leak Test

Special tools and workshop equipment required

- Brake pressure gauge 0-250 bar - V.A.G 1310 A-
- M10 Adapter - V.A.G 1310/6-

Test Prerequisites

Brake system (hydraulic unit, brake hoses, brake lines and brake calipers) operating properly and free of leaks.

– Remove the bleeder valve at one front brake caliper. Connect pressure gauge -V.A.G 1310 A- and bleed.

– Apply pressure to brake pedal until the gauge indicates a pressure of 50 bar. The pressure must not drop by more than 4 bar during the test period of 45 seconds. Replace master cylinder if pressure drops greatly.

4.2 Brake Booster Vacuum System, Checking

The following checks will be helpful when performing Fault Finding if there are complaints regarding the brake booster or the so-called hard brake pedal.

The following components are included in the check:

- Brake booster
- Seal between the master brake cylinder and the brake booster.
- Check valve
- Vacuum hoses and connectors
- Vacuum pump (if equipped)

Keep the geographical surrounding in mind when evaluating the measured results. The higher above sea level, the lower the air pressure.

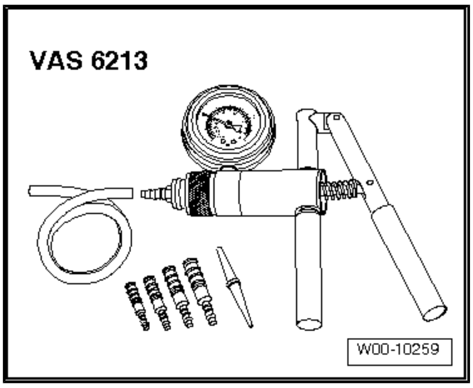
Always observe all test requirements before checking the vacuum system:

- Check all the vacuum hoses for damage (for example, tears or damaged caused by animals) and make sure they are secure
- Maintain clean working conditions when working on the vacuum system
- Clean the engine compartment before starting, if necessary

Special tools and workshop equipment required

- Brake Servo Tester - VAS 6721-

- Hand Vacuum Pump - VAS 6213-



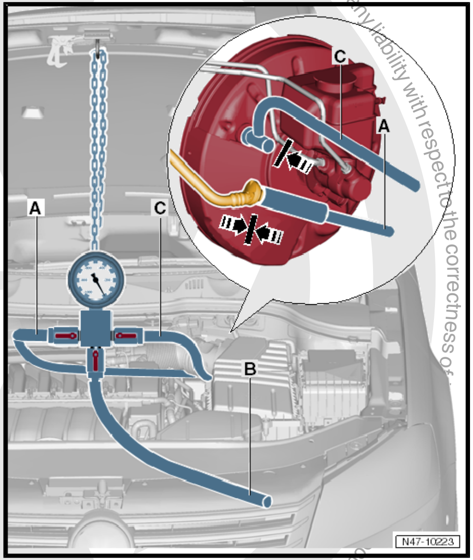
-VAS 6721- , Connecting

– Remove the vacuum hose from the brake booster.

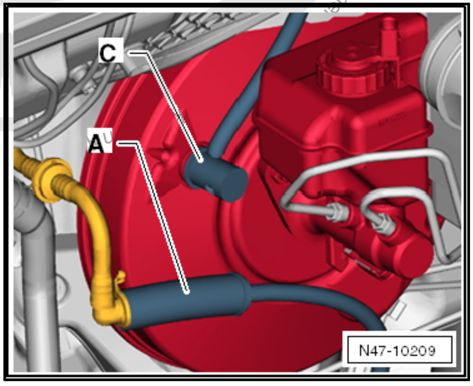
Pressing the brake pedal a few times beforehand makes it easier to remove the vacuum hose.

– Connect the -VAS 6721- -see following illustrations-.

Item number	Component	Explanation
A	Shut-off valve	In direction toward the vacuum hose, the check valve and vacuum pump (if equipped).
B	Shut-off valve	◆ Opening the brake servo tester - VAS 6721- makes it easier to remove. ◆ Open to simulate an incorrect source. ◆ Connecting the -VAS 6213- .
C	Shut-off valve	Toward the brake booster



– Connect the -VAS 6721- hose -A- too the vacuum hose and push the adapter -C- into the brake booster.



Vacuum, Checking

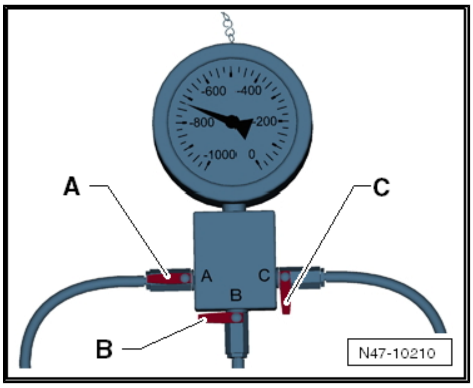
Note

- *The average earth atmospheric air pressure at sea level (N. N.) is 1013 mbar and it decreases dramatically at higher altitudes (approximately 100 mbar every 1000 meters higher) Local and time fluctuations will influence the vacuum.*
- *A cold engine, the A/C switched being on and even only the engine idling can negatively influence the vacuum.*

– Check all the vacuum hoses beforehand for damage (for example, tears or damaged caused by animals) and make sure they are secure

– Connect the -VAS 6721- .

– Open the shut-off valve -A-.



– Close the shut-off valves -B+C-.

– Start the warm (above 60° C) engine and press the accelerator pedal one time quickly (engine RPM higher than 2,000).

– Read the measured value displayed.

Normally (see note) the vacuum should be between 600 and 950 mbar (depending on the engine installed).

Check the vacuum system for leaks if the measured value is not reached, even though all requirements (see notes).

– Create the vacuum using a -VAS 6213- for comparison purposes.

Opening the shut-off valve -B- makes it easier to remove the hose connections and the adapter.

Leak Test

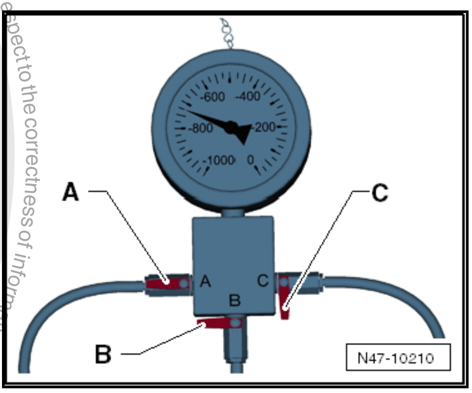
Note

- *The average earth atmospheric air pressure at sea level (N. N.) is 1013 mbar and it decreases dramatically at higher altitudes (approximately 100 mbar every 1000 meters higher) Local and time fluctuations will influence the vacuum.*
- *A cold engine, the A/C switched being on and even only the engine idling can negatively influence the vacuum.*

– Check all the vacuum hoses beforehand for damage (for example, tears or damaged caused by animals) and make sure they are secure

– Connect the brake servo tester - VAS 6721- .

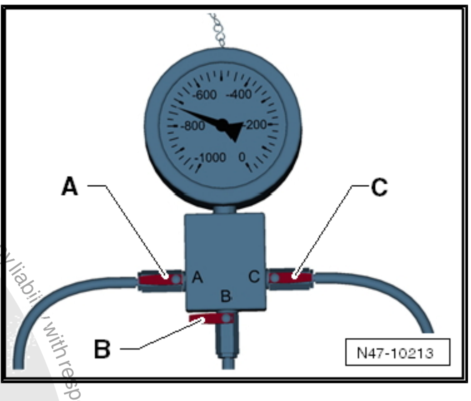
– Open the shut-off valve -A-.



– Close the shut-off valves -B+C-.

– Start the warm (above 60° C) engine and press the accelerator pedal one time quickly (engine RPM higher than 2,000).

Normally (see note) the vacuum should be between 600 and 950 mbar (depending on the engine installed).



- Open the shut-off valve -C- and evacuate the brake booster.
- Turn off the engine.
- Read the measured value displayed and write it down.

The vacuum may drop 400 mbar within 12 hours.

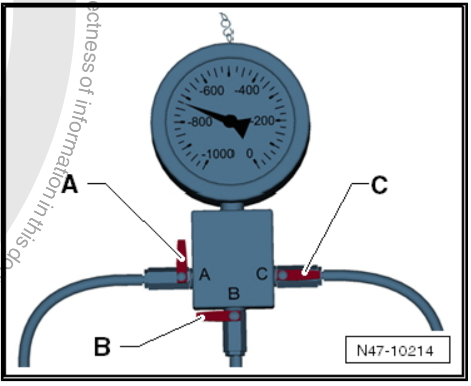
If the drop in vacuum is greater, check the....

1 - Brake booster or in the

2 - Check valve, vacuum hoses and connections and vacuum pump/intake manifold for leaks.

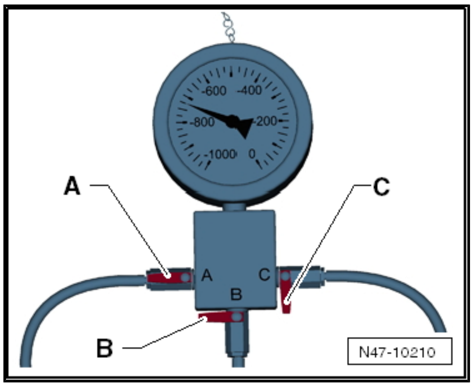
The vacuum will drop considerably within a few seconds if there are large leaks.

Checking the Vacuum Near the Brake Booster



- Close the shut-off valve -A- after creating the vacuum to test the brake booster vacuum.

Vacuum Test Near the Check Valve, Vacuum Hoses and Connections and Vacuum Pump/Intake Manifold



- Close the shut-off valve -C- after creating the vacuum to check the -VAS 6721- vacuum up to the intake manifold or up to the vacuum pump.

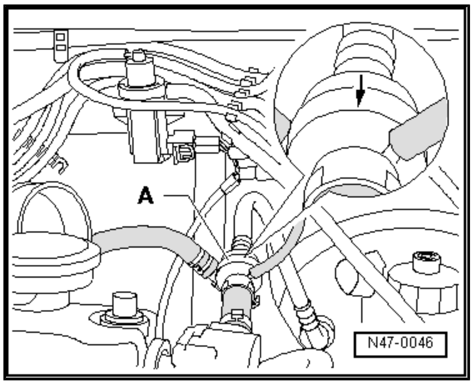
Opening the shut-off valve -B- makes it easier to remove the hose connections and the adapter.

Vacuum, Creating Using -VAS 6213-

In certain situations, the vacuum can be created using a -VAS 6213- instead of using the engine or a vacuum pump.

- Connect the -VAS 6213- to the vacuum hose on the connection -B- on the -VAS 6721- .
- Open the shut-off valve -B-.
- Create the vacuum using the -VAS 6213- until a vacuum between 600 and 950 mbar on the -VAS 6721- is displayed.
- Perform the tests.

4.3 Check Valve , Checking



- ♦ The check valve -A- must allow air through in direction of arrow.
- ♦ Check-valve must remain closed for opposite direction.

Observe correct installation position!

5 Removal and Installation

⇒ “5.1 Front Brakes”, page 129

⇒ “5.2 Rear Brakes”, page 134

⇒ “5.3 Brake System Vacuum Pump V192 ”, page 137

⇒ “5.4 Brake Booster Pressure Sensor G294 ”, page 137

⇒ “5.5 Brake Lamp Switch F 07 November 2005”, page 138

⇒ “5.6 Master Brake Cylinder”, page 138

⇒ “5.7 Brake Booster”, page 139

5.1 Front Brakes

⇒ “5.1.1 Brake Caliper Piston, FS III”, page 129

⇒ “5.1.2 Brake Caliper Piston, FN 3 ”, page 130

⇒ “5.1.3 Brake Caliper Piston, FNR-G ”, page 132

5.1.1 Brake Caliper Piston, FS III

Special tools and workshop equipment required

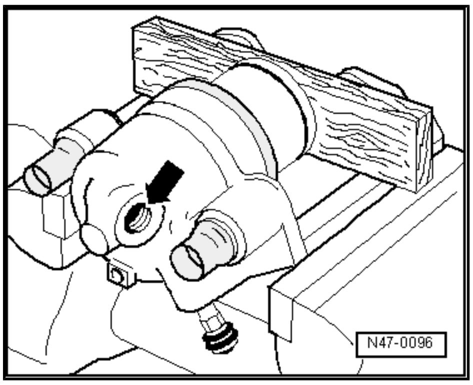
- Trim Removal Wedge - 3409-
- Piston Resetting Tool - T 10145-

Removing

– Force piston from brake caliper using compressed air.

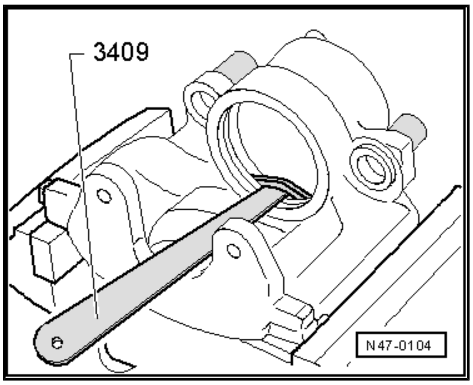
Note

Place a wooden board into the recess of the caliper housing so it is not damaged.



– Remove seal with -3409- .

When removing, make sure that surface of cylinder is not damaged.



Installing

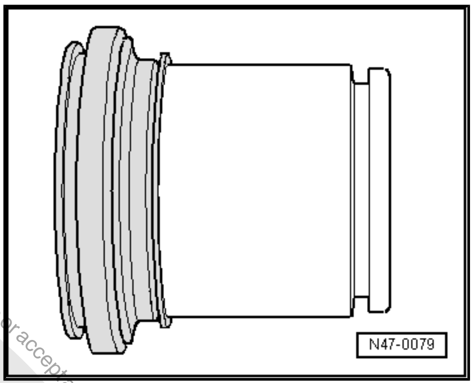
– The surface of the piston and seal must only be cleaned with mineral spirits and then dried.

– Thinly coat piston and seal with assembly paste G 052 150 A2 before inserting.

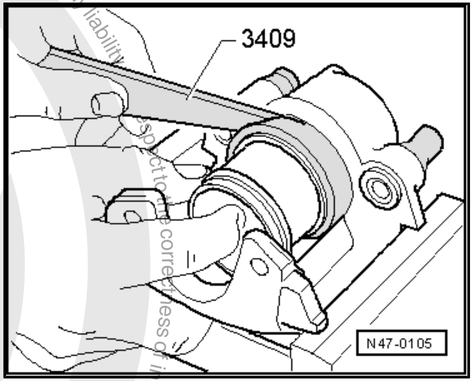
– Install sealing ring in brake caliper.

– Place protective cap with outer sealing lip onto piston.

– Insert inner sealing lip in cylinder groove with -3409- .

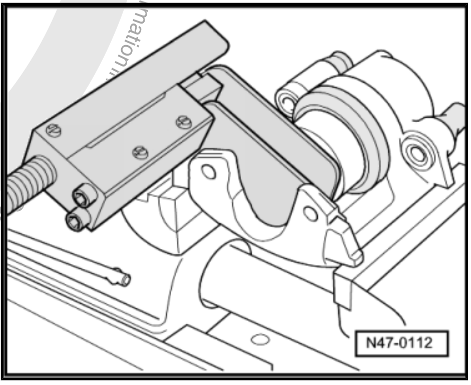


Hold piston in front of brake caliper for this procedure.



– Press piston into brake caliper using piston resetting tool.

Outer sealing lip of protective cap will then engage in piston groove.



5.1.2 Brake Caliper Piston, FN 3

Special tools and workshop equipment required

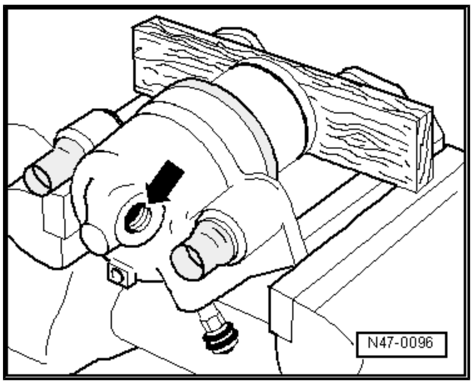
- ♦ Disk - T 10146/6-
- ♦ Trim Removal Wedge - 3409-
- ♦ Piston Resetting Tool - T 10145-

Removing

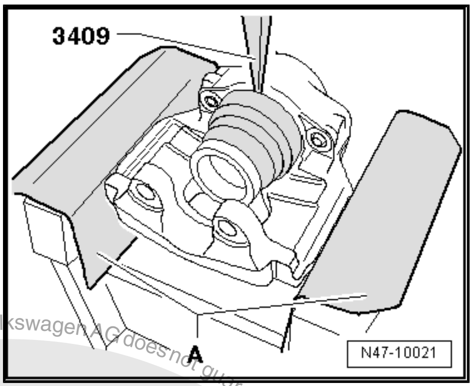
– Force piston from brake caliper using compressed air.

Note

Place a wooden board into the recess of the caliper housing so it is not damaged.



– Remove protective cap from brake caliper with -3409- .



– Remove seal with -3409- .

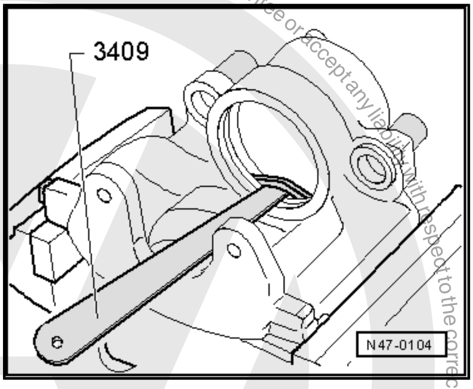
When removing, make sure that surface of cylinder is not damaged.

Installing

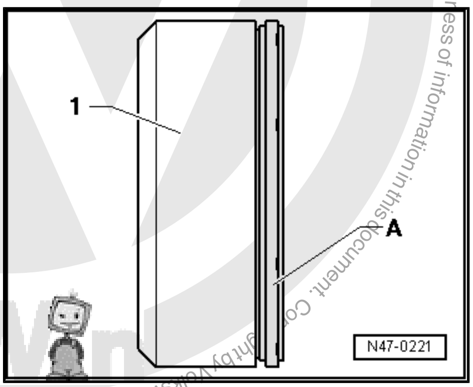
– The surface of the piston and seal must only be cleaned with mineral spirits and then dried.

– Thinly coat piston and seal with assembly paste G 052 150 A2 before inserting.

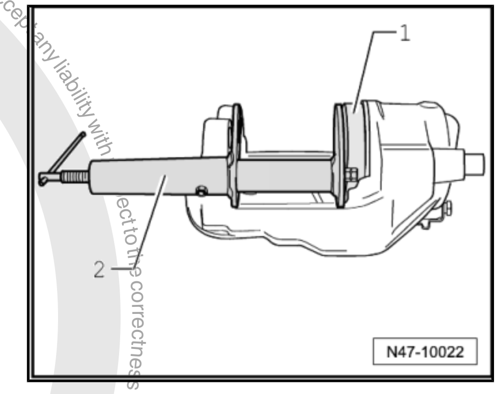
– Install sealing ring in brake caliper.



– Insert the protective cap -A- into the assembly tool T 10146/6 -1-.

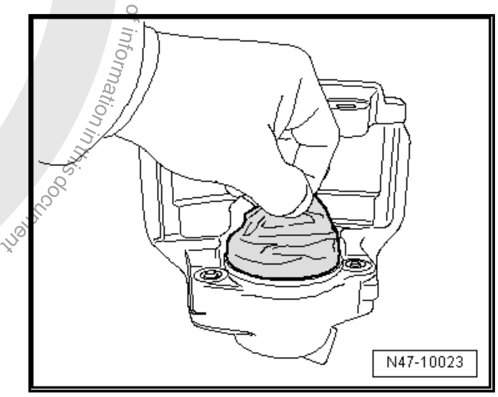


– Press the protective cap with the assembly tool -1- and the piston resetting tool -2- into the brake caliper so that it contacts the brake caliper all around.

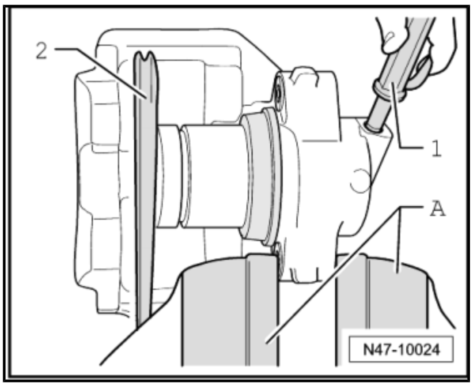


Check Seating of Protective Caps:

– Protective cap must no longer be able to be pulled from brake caliper by hand.



– Press the piston lightly against the protective cap and lock it into position, for example with the trim removal wedge -2-.



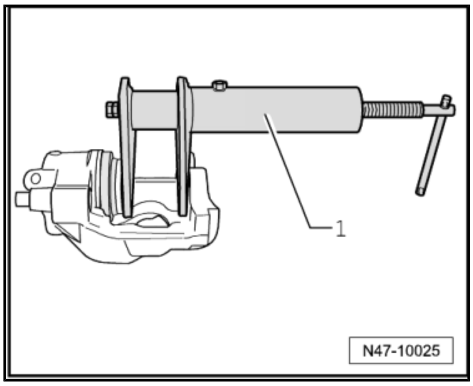
Note

Do not angle piston, to avoid damaging the seal sleeve.

– Blow compressed air (max. 3 bar) onto protective cap -1-. Protective cap springs onto piston.

– Press piston into brake caliper using -T 10145- -1-.

Outer sealing lip of protective cap will then engage in piston groove.



5.1.3 Brake Caliper Piston, FNR-G

Special tools and workshop equipment required

- Disk - T 10146/6-
- Trim Removal Wedge - 3409-
- Piston Resetting Tool - T 10145-

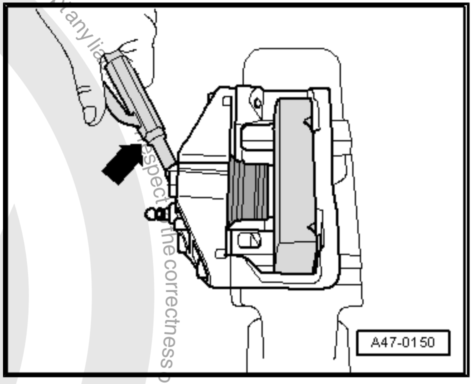
Removing

– Force piston from brake caliper using compressed air.

Note

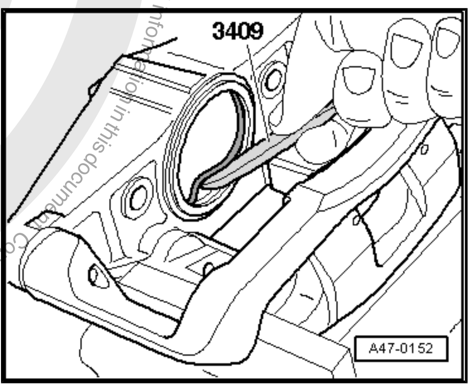
Place a wooden board into the recess of the caliper housing so it is not damaged.

– Remove protective cap from brake caliper with -3409- .



– Remove seal with -3409- .

When removing, make sure that surface of cylinder is not damaged.

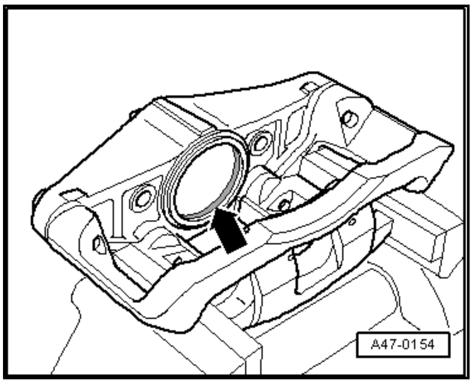


Installing

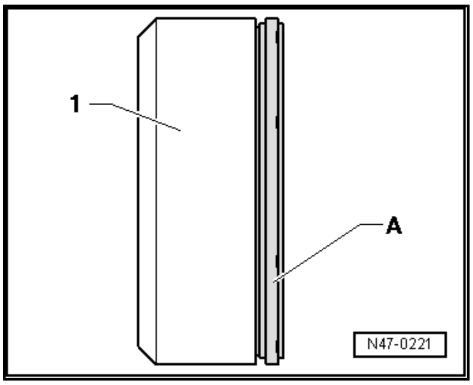
– The surface of the piston and seal must only be cleaned with mineral spirits and then dried.

– Thinly coat piston and seal with assembly paste G 052 150 A2 before inserting.

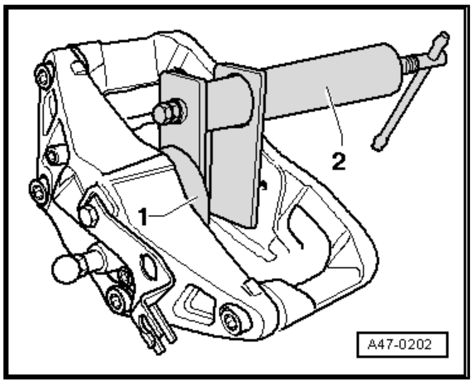
– Install sealing ring in brake caliper.



– Insert the protective cap -A- into the assembly tool T 10146/1 -1-.



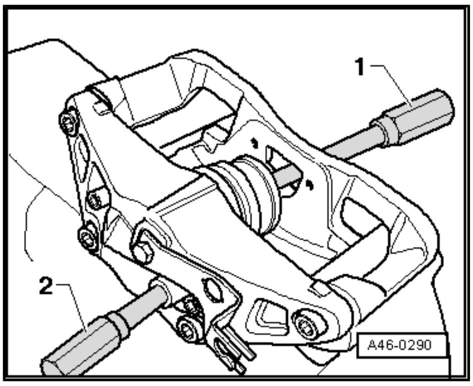
– Press the protective cap with the assembly tool -1- and the -T 10145- -2- into the brake caliper so that it contacts the brake caliper all around.



Check Seating of Protective Caps

– Protective cap must no longer be able to be pulled from brake caliper by hand.

– Lightly press piston against protective cap with an extension and ratchet adapter -1- and hold it there, in that position.



Note

Do not angle piston, to avoid damaging the seal sleeve.

– Blow compressed air (max. 3 bar) onto protective cap -2-. Protective cap springs onto piston.

– Press piston with hand into brake caliper, possibly push back slightly with piston resetting tool.

Outer sealing lip of protective cap will then engage in piston groove.

5.2 Rear Brakes

⇒ “5.2.1 Brake Caliper Piston”, page 134

⇒ “5.2.2 Brake Caliper Piston, Bosch”, page 135

5.2.1 Brake Caliper Piston

Special tools and workshop equipment required

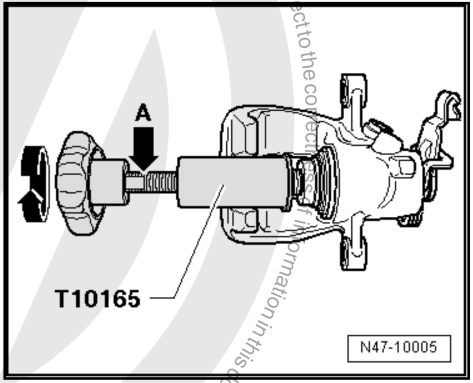
- Resetting and Extracting Tool - T 10165-
- Trim Removal Wedge - 3409-

Removing

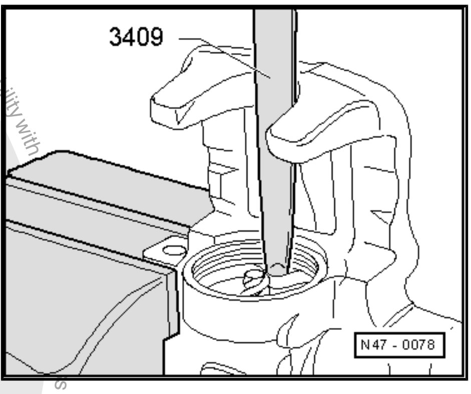
– Remove piston from brake caliper by turning knurled wheel toward left.

Insert piston compressing and extracting tool so collar makes contact on piston.

- For pistons that are difficult to move, an open-end wrench (size 13 mm) can be applied at the appropriate wrench surface -arrow A-.



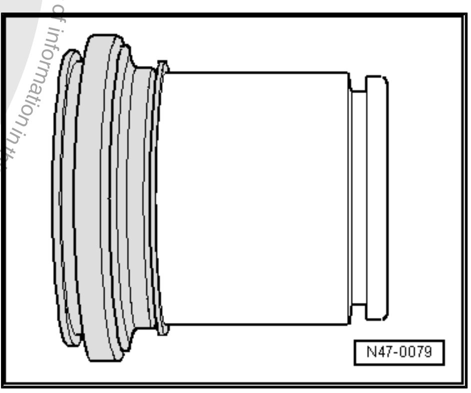
- Remove seal with -3409- .



Installing

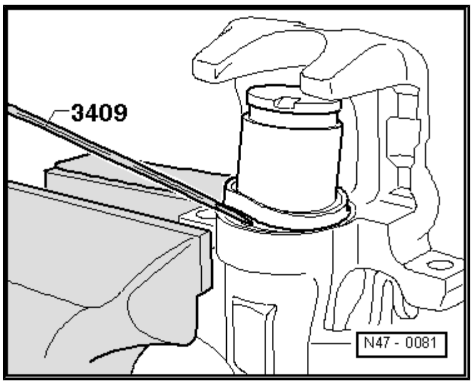
- The surface of the piston and seal must only be cleaned with mineral spirits and then dried.
- Thinly coat piston and seal with assembly paste G 052 150 A2 before inserting.

- Place protective cap with outer sealing lip on piston.
- Insert inner sealing lip in cylinder groove with -3409- .

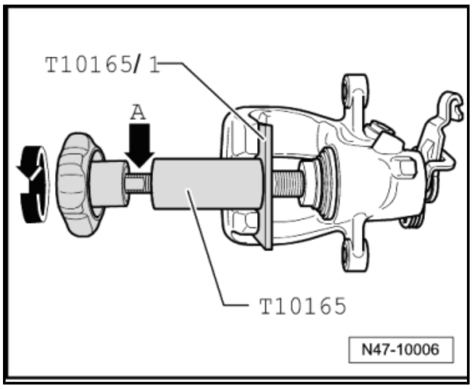


Hold piston in front of brake caliper for this procedure.

- Install the piston by turning knurled wheel toward right.



- Use special tool 10165/1 for assistance when installing.
- ♦ Insert piston compressing and extracting tool so collar makes contact on brake caliper.
- ♦ The automatic adjustment in brake caliper is destroyed when piston is moved with piston resetting tool (for example T 10145) or footbrake is operated.



5.2.2 Brake Caliper Piston, Bosch

Special tools and workshop equipment required

- ♦ Resetting and Extracting Tool - T 10165-
- ♦ Trim Removal Wedge - 3409-

Removing

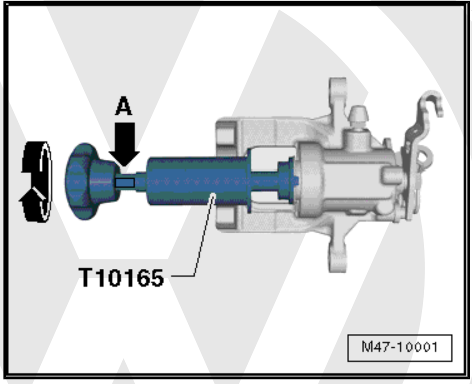
WARNING

Adjust the brake piston is permitted only with the -T10165- .

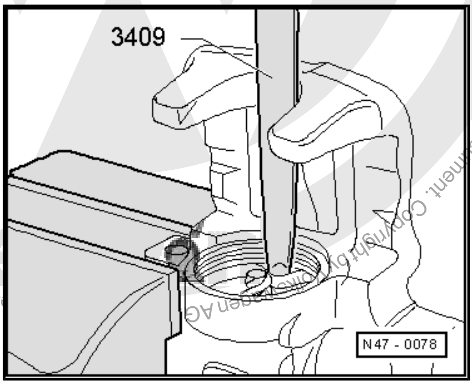
- – Remove piston from brake caliper by turning knurled wheel toward left.

Install the -T10165- so that the collar touches the piston.

- ♦ For pistons that are difficult to move, an open-end wrench (size 13 mm) can be applied at the appropriate wrench surface -arrow A-.



- – Remove seal using -3409- .

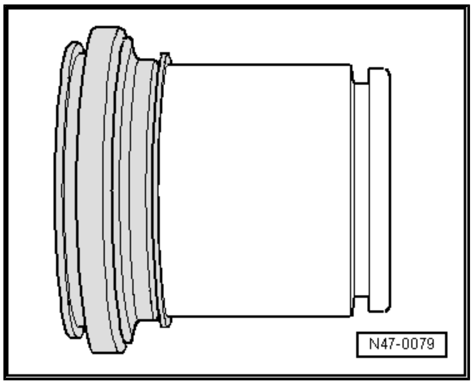


Installing

Install in reverse order of removal. Note the following:

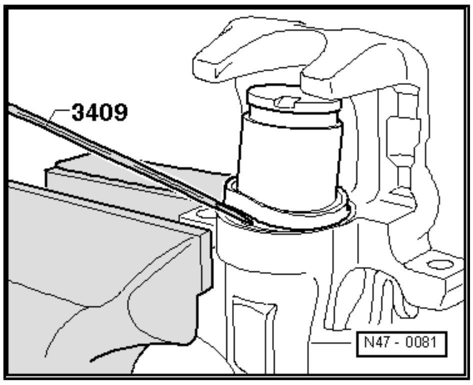
- – The surface of the piston and seal must only be cleaned with mineral spirits and then dried.
- – Coat the piston and seal lightly with assembly paste - G 052 150 A2- before installing.

- – Place the cap with the outer sealing lip on the piston.



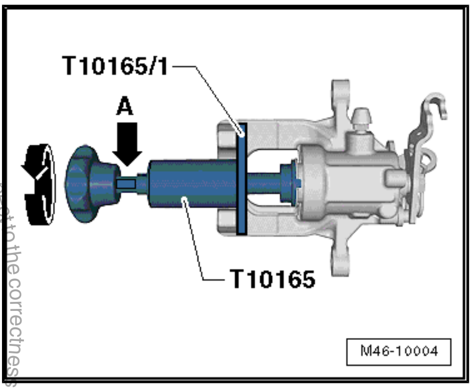
- – Using -3409- , insert inner sealing lip into cylinder groove.

Hold piston in front of brake caliper for this procedure.



- Turn the thumbwheel on the -T10165- to the right and install the piston. Be careful not to damage the cap.
- Use the -T10165/1- to help you bolt it on.

♦ Install the -T10165- so that the collar on the -T10165/1- is touching.



5.3 Brake System Vacuum Pump - V192-

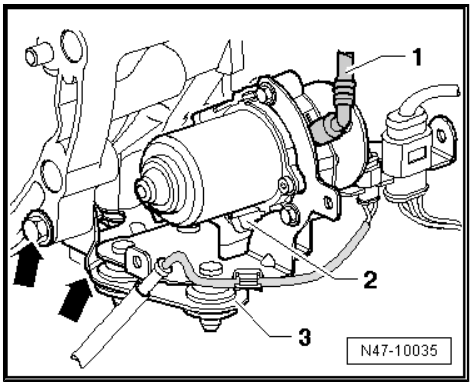
Component location of brake system vacuum pump is located on automatic transmission at front in direction of travel.

It is not possible to service the brake system vacuum pump . If there is a malfunction, replace brake system vacuum pump .

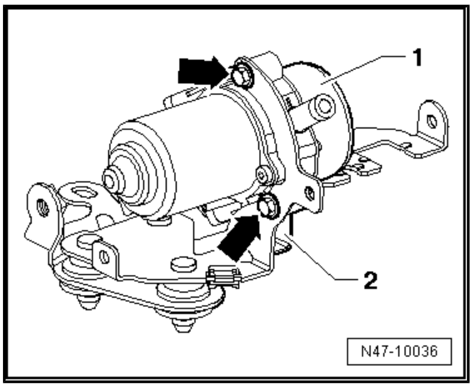
Can be checked in “Guided Fault Finding” using the -VAS 5051- .

Removing

- Disconnect vacuum hose -1- from brake system vacuum pump .
- Disconnect harness connector -2- for brake system vacuum pump .
- Remove remaining harness connectors and wires from bracket -3-.
- Remove the -arrows- bracket -3- with brake system vacuum pump .



- Then unscrew -arrows- brake system vacuum pump -1- from bracket -2-.



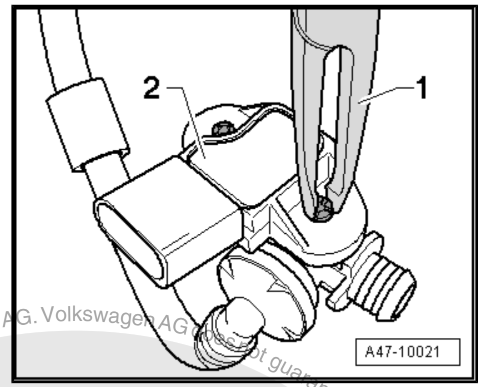
Installing

Install in reverse order of removal.

Tightening Specifications:	
Brake system vacuum pump to bracket	8 Nm
Bracket to automatic transmission	25 Nm

5.4 Brake Booster Pressure Sensor - G294-

- Remove engine cover.
- Pull vacuum hose with brake booster pressure sensor out of brake booster.



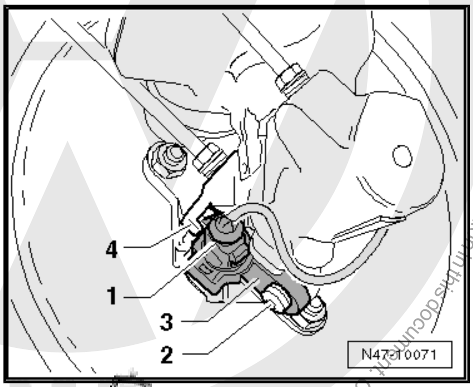
- Release the clips using pliers -1-.
- Carefully pry the brake booster pressure sensor -2- off.

5.5 Brake Lamp Switch - F- 07 November 2005

On vehicles before calendar week 45/05, brake light switch was located on brake pedal.

Removing

- Remove engine cover.
- On some vehicles, intake hose must be removed.
- Disconnect the connector -1- from brake lamp switch .
- Remove bolt -2- from brake master cylinder.
- Pull the brake lamp switch -3- downward and off from the brake master cylinder and remove it from the retaining tab at the top -4-.



Installing

- Install in reverse order of removal.

Tightening Specifications:	
TORX® bolt to brake master cylinder	5 Nm

5.6 Master Brake Cylinder

Special tools and workshop equipment required

- Brake Charger/Bleeder Unit - VAS 5234-
- Torque Wrench 5-50 Nm - V.A.G 1331-

Removing

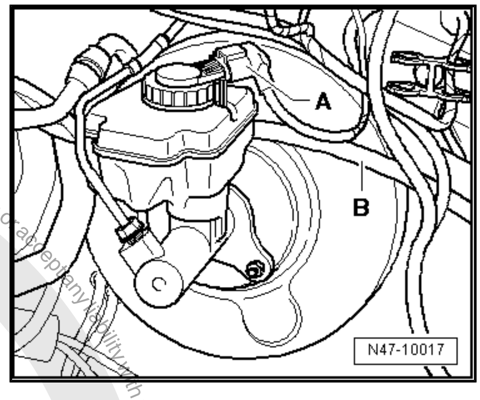
- Note or request radio code on vehicles with coded radio if necessary.
- Disconnect battery, refer to ⇒ Electrical Equipment; Rep. Gr. 27 ; Removal and Installation .
- Remove and install the battery, refer to ⇒ Electrical Equipment; Rep. Gr. 27 ; Removal and Installation .

An exception is the V6 Eos; in this case remove the air filter housing.

- Remove the battery casing.
- Place sufficient lint-free cloths in the area of the engine and transmission.
- Extract as much brake fluid as possible from brake fluid reservoir using -VAS 5234- or extraction device -V.A.G 1869/4- .

For Vehicles with Manual Transmission

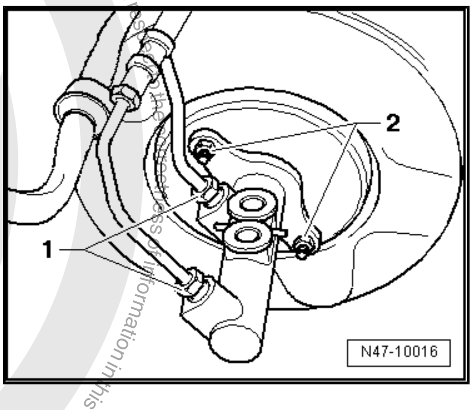
– Disconnect the clutch slave cylinder return hose -B- and secure it out of the way or clamp it off with a commercially available tool such as the Hazet 4590 and then remove it.



All Vehicles

– Disconnect connector -A- from floating warning indicator sensor.

– Disconnect the connector from the brake lamp switch (only on vehicles from calendar week 45/05).



– Remove brake fluid reservoir, press the engagement straps toward outside at reservoir and simultaneously pull brake fluid reservoir out of sealing plugs.

– Disconnect the brake lines -1- at the brake master cylinder and seal the lines with sealing plugs from repair kit Part No. 1H0 698 311 A.

– Remove the nuts -2- from master brake cylinder.

– If present, remove heat shield.

– Carefully take brake master cylinder out of brake booster.

Installing

– Install in reverse order of removal.

Observe the following points when installing:

– When installing together the brake master cylinder and brake booster, make sure that the push rod is correctly located in the brake master cylinder.

– Bleed brake system, refer to ⇒ “1.1 Brake System, Bleeding”, page 107 .

Tightening Specifications:	
Master brake cylinder at brake booster ◆ Use new nuts!	25 Nm
Brake lines to master brake cylinder	14 Nm

5.7 Brake Booster

Note

Check the brake boost vacuum first if there are complaints regarding the brake booster. Refer to ⇒ “4.2 Brake Booster Vacuum System, Checking”, page 125 .

Special tools and workshop equipment required

- Brake Charger/Bleeder unit - VAS 5234-
- Torque Wrench 5-50 Nm - V.A.G 1331-

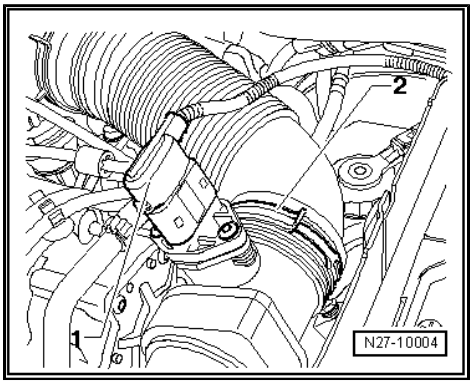
Removing

– Note or request radio code on vehicles with coded radio if necessary.

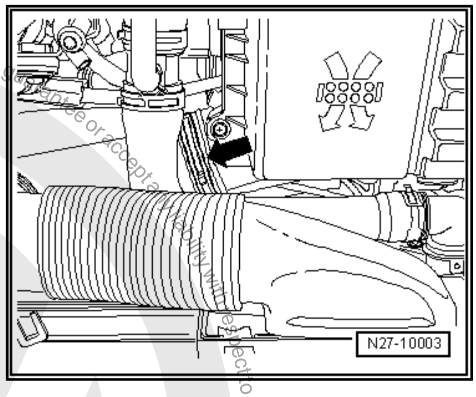
– Disconnect battery, refer to ⇒ Electrical Equipment; Rep. Gr. 27 ; Removal and Installation .

On Vehicles with Diesel Engine

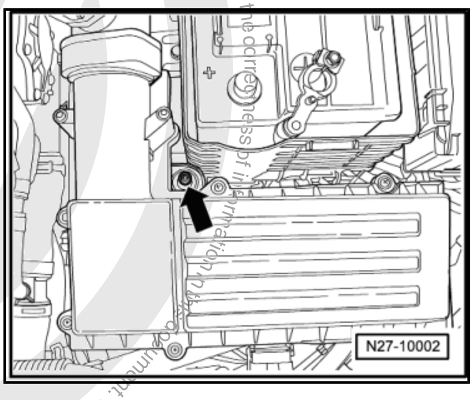
- Disconnect connection -1- and remove rear spring hose clamp from intake hose.



- Remove spring hose clamp -arrow- and remove hose from air filter housing.



- Remove screw from air filter housing -arrow-.
- Move air filter housing upward out of brackets and remove.

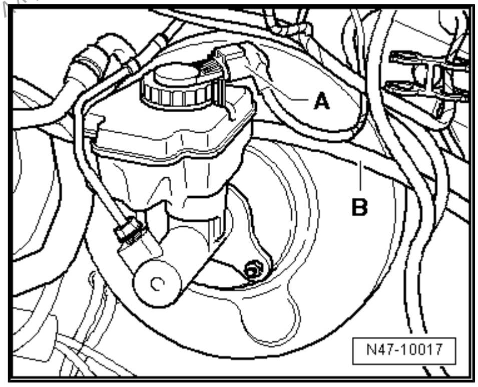


All Vehicles

- Remove and install the battery, refer to ⇒ Electrical Equipment; Rep. Gr. 27 ; Removal and Installation .
- Remove the battery carrier.
- Place sufficient lint-free cloths in the area of the engine and transmission.
- Extract as much brake fluid as possible from brake fluid reservoir using -VAS 5234- or extraction device -V.A.G 1869/4- .

For Vehicles with Manual Transmission

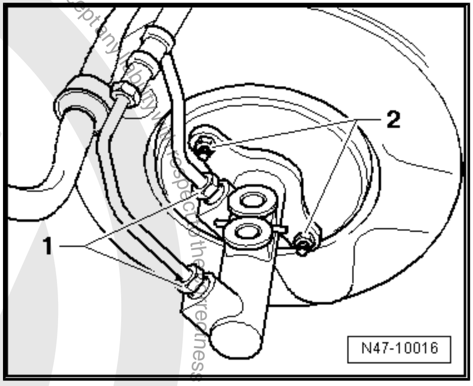
- Disconnect the clutch slave cylinder return hose -B- and secure it out of the way or clamp it off with a commercially available tool such as the Hazet 4590 and then remove it.



All Vehicles

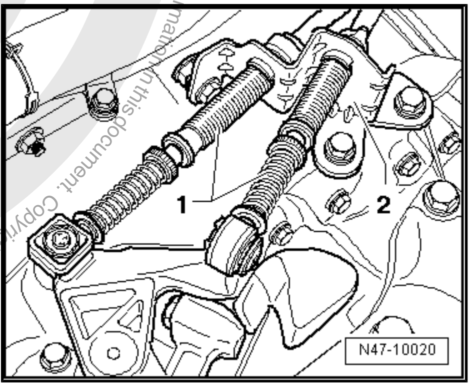
- Disconnect connector -A- from floating warning indicator sensor.
- Disconnect the connector from the brake lamp switch (only on vehicles from calendar week 45/05).

- Remove brake fluid reservoir, press the engagement straps toward outside at reservoir and simultaneously pull brake fluid reservoir out of sealing plugs.
- Disconnect the brake lines -1- at the brake master cylinder and seal the lines with sealing plugs from repair kit Part No. 1H0 698 311 A.
- Remove the nuts -2- from master brake cylinder.
- If present, remove heat shield.
- Carefully take brake master cylinder out of brake booster.
- Pull vacuum hose out of brake booster.



For Vehicles with Manual Transmission

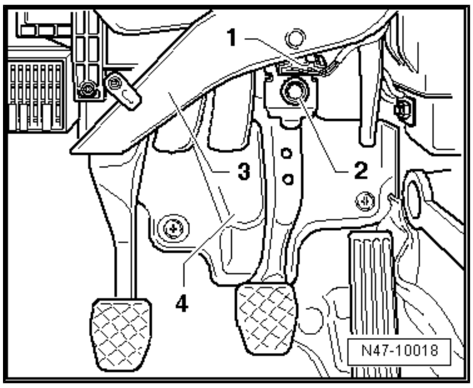
- Remove the cables -1-, remove the bracket -2- and move it to the side, refer to ⇒ Manual Transmission; Rep. Gr. 34 ; Removal and Installation .



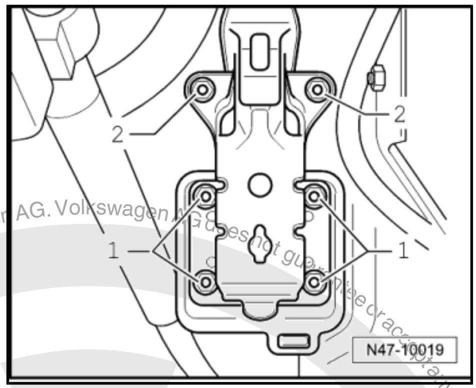
All Vehicles

- Remove trim on driver side, refer to “Door Trim Panels” in ⇒ Body - Interior; Rep. Gr. 70 ; Removal and Installation .

Brake light switch is no longer present on mounting bracket from CW 45/05.



- Disconnect connector -1- from brake lamp switch.
- Remove Brake lamp Switch-2- by rotating 45° toward left.
- Remove air channel -3-.
- Remove cover -4-.
- Disconnect brake pedal from brake booster, refer to ⇒ “3.5 Brake Pedal, Separating from Brake Booster”, page 101 .



- Remove the nuts -1- from brake booster.
- Loosen both upper nuts -2- from the mounting bracket.
- Carefully remove brake booster from vehicle.

Installing

- Install in reverse order of removal.

Observe the following points when installing:

- Clip brake pedal together with brake booster, refer to ⇒ page 102 .
- After installing, bleed brake system, refer to ⇒ “1.1 Brake System, Bleeding”, page 107 and clutch.

Only on vehicles up to calendar week 45/05:

- Brake light switch, installing, refer to ⇒ “3.6 Brake Lamp Switch F , through 04 November 2005”, page 102 .

Tightening Specifications:

Brake booster to foot pedal assembly/cross panel ♦ Use new nuts!	25 Nm
Master brake cylinder at brake booster ♦ Use new nuts!	25 Nm
Brake lines to master brake cylinder	14 Nm

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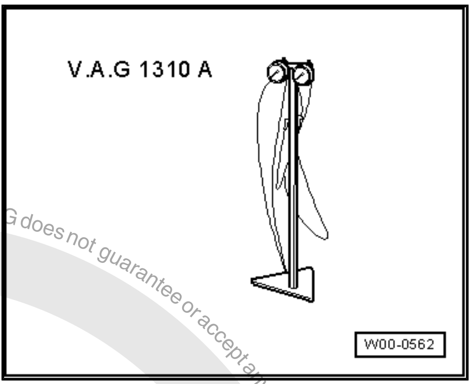
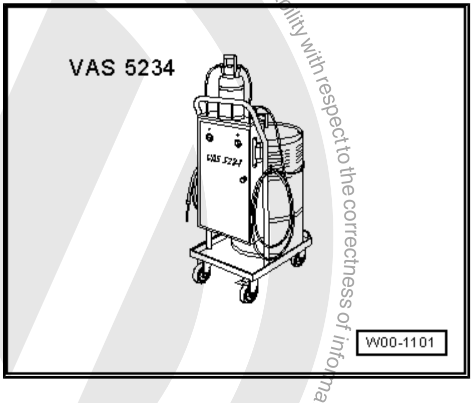
6 Special Tools

Special tools and workshop equipment required

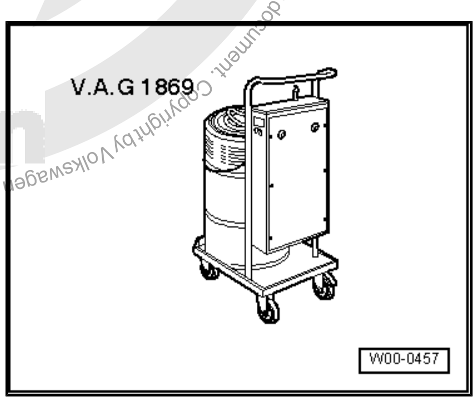
- M10 Adapter - V.A.G 1310/6-


V.A.G 1310 A
W00-0562

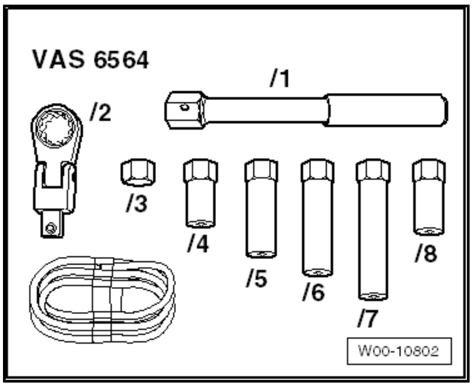
- Brake Charger/Bleeder Unit - VAS 5234-


VAS 5234
VAS 5234
W00-1101

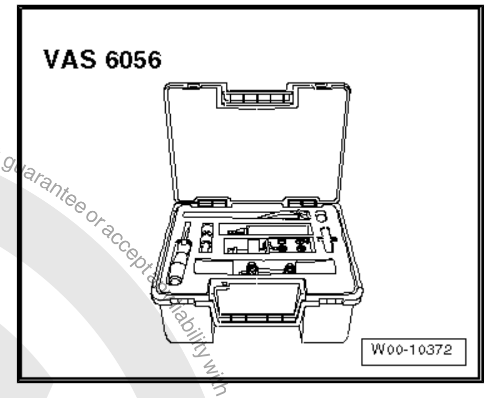
- or
- Brake Charger/Bleeder Unit - V.A.G 1869-
- Brake Charger/Bleeder Unit Suction Adapter - V.A.G 1869/4-


V.A.G 1869
W00-0457

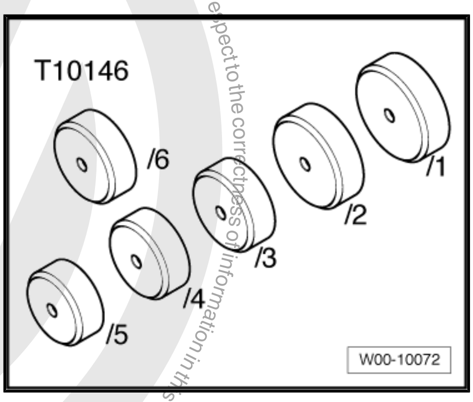
- Tool Set for Brake Bleeding - VAS 6564-


VAS 6564
/1
/2
/3
/4
/5
/6
/7
/8
W00-10802

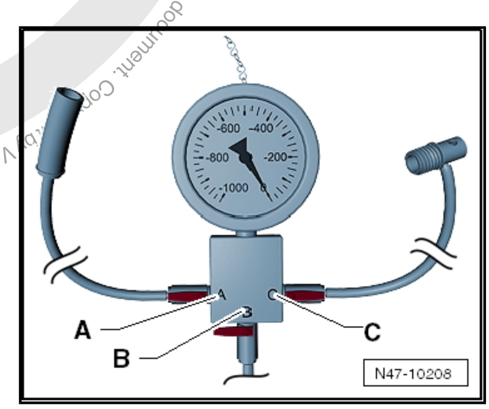
- Flaring Tool - VAS 6056-


VAS 6056
W00-10372

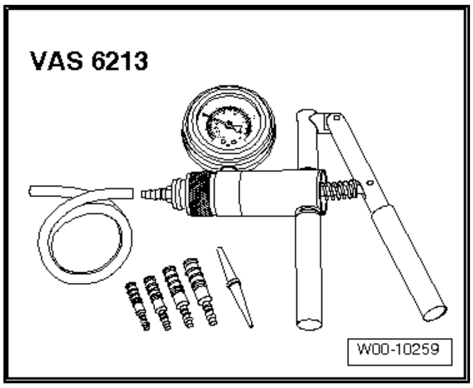
- Disk - T 10146/6-


T10146
/6
/1
/2
/3
/4
/5
W00-10072

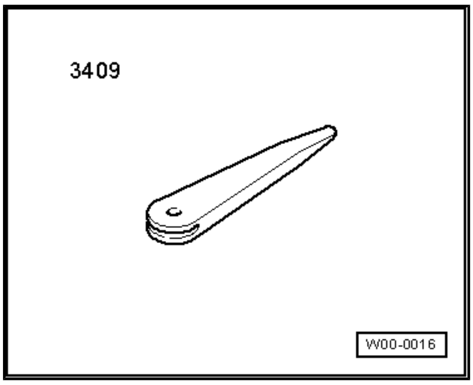
- Brake Servo Tester - VAS 6721-


-600
-400
-800
-200
1000
A
B
C
N47-10208

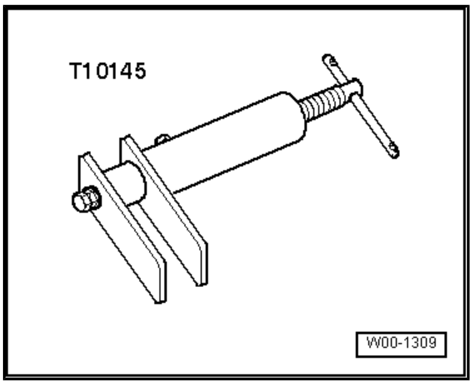
- Hand Vacuum Pump - VAS 6213-


VAS 6213
W00-10259

- Trim Removal Wedge - 3409-


3409
W00-0016

- Piston Resetting Tool - T 10145-


T10145
W00-1309

- Brake pressure gauge 0-250 bar - V.A.G 1310 A-

7 Revision History

DRUCK NUMBER: K0259000121

Factory Edition	Edit Edition	Job Type	Feedback	Notes	Quality Checked By
03.2012	10/09/2015	Local Update		(Rotors replaced in pairs per axle) until factory update is provided	Tom Perry

Cautions & Warnings

Please read these WARNINGS and CAUTIONS before proceeding with maintenance and repair work. You must answer that you have read and you understand these WARNINGS and CAUTIONS before you will be allowed to view this information.

- If you lack the skills, tools and equipment, or a suitable workshop for any procedure described in this manual, we suggest you leave such repairs to an authorized Volkswagen retailer or other qualified shop. We especially urge you to consult an authorized Volkswagen retailer before beginning repairs on any vehicle that may still be covered wholly or in part by any of the extensive warranties issued by Volkswagen.

- Disconnect the battery negative terminal (ground strap) whenever you work on the fuel system or the electrical system. Do not smoke or work near heaters or other fire hazards. Keep an approved fire extinguisher handy.

- Volkswagen is constantly improving its vehicles and sometimes these changes, both in parts and specifications, are made applicable to earlier models. Therefore, part numbers listed in this manual are for reference only. Always check with your authorized Volkswagen retailer parts department for the latest information.

- Any time the battery has been disconnected on an automatic transmission vehicle, it will be necessary to reestablish Transmission Control Module (TCM) basic settings using the VAG 1551 Scan Tool (ST).

- Never work under a lifted vehicle unless it is solidly supported on stands designed for the purpose. Do not support a vehicle on cinder blocks, hollow tiles or other props that may crumble under continuous load. Never work under a vehicle that is supported solely by a jack. Never work under the vehicle while the engine is running.

- For vehicles equipped with an anti-theft radio, be sure of the correct radio activation code before disconnecting the battery or removing the radio. If the wrong code is entered when the power is restored, the radio may lock up and become inoperable, even if the correct code is used in a later attempt.

- If you are going to work under a vehicle on the ground, make sure that the ground is level. Block the wheels to keep the vehicle from rolling. Disconnect the battery negative terminal (ground strap) to prevent others from starting the vehicle while you are under it.

- Do not attempt to work on your vehicle if you do not feel well. You increase the danger of injury to yourself and others if you are tired, upset or have taken medicine or any other substances that may impair you or keep you from being fully alert.

- Never run the engine unless the work area is well ventilated. Carbon monoxide (CO) kills.

- Always observe good workshop practices. Wear goggles when you operate machine tools or work with acid. Wear goggles, gloves and other protective clothing whenever the job requires working with harmful substances.

- Tie long hair behind your head. Do not wear a necktie, a scarf, loose clothing, or a necklace when you work near machine tools or running engines. If your hair, clothing, or jewelry were to get caught in the machinery, severe injury could result.

- Do not re-use any fasteners that are worn or deformed in normal use. Some fasteners are designed to be used only once and are unreliable and may fail if used a second time. This includes, but is not limited to, nuts, bolts, washers, circlips and cotter pins. Always follow the recommendations in this manual - replace these fasteners with new parts where indicated, and any other time it is deemed necessary by inspection.

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Version 1.0

Cautions & Warnings

- Illuminate the work area adequately but safely. Use a portable safety light for working inside or under the vehicle. Make sure the bulb is enclosed by a wire cage. The hot filament of an accidentally broken bulb can ignite spilled fuel or oil.

- Friction materials such as brake pads and clutch discs may contain asbestos fibers. Do not create dust by grinding, sanding, or by cleaning with compressed air. Avoid breathing asbestos fibers and asbestos dust. Breathing asbestos can cause serious diseases such as asbestosis or cancer, and may result in death.

- Finger rings should be removed so that they cannot cause electrical shorts, get caught in running machinery, or be crushed by heavy parts.

- Before starting a job, make certain that you have all the necessary tools and parts on hand. Read all the instructions thoroughly; do not attempt shortcuts. Use tools that are appropriate to the work and use only replacement parts meeting Volkswagen specifications. Makeshift tools, parts and procedures will not make good repairs.

- Catch draining fuel, oil or brake fluid in suitable containers. Do not use empty food or beverage containers that might mislead someone into drinking from them. Store flammable fluids away from fire hazards. Wipe up spills at once, but do not store the oily rags, which can ignite and burn spontaneously.

- Use pneumatic and electric tools only to loosen threaded parts and fasteners. Never use these tools to tighten fasteners, especially on light alloy parts. Always use a torque wrench to tighten fasteners to the tightening torque listed.

- Keep sparks, lighted matches, and open flame away from the top of the battery. If escaping hydrogen gas is ignited, it will ignite gas trapped in the cells and cause the battery to explode.

- Be mindful of the environment and ecology. Before you drain the crankcase, find out the proper way to dispose of the oil. Do not pour oil onto the ground, down a drain, or into a stream, pond, or lake. Consult local ordinances that govern the disposal of wastes.

- The air-conditioning (A/C) system is filled with a chemical refrigerant that is hazardous. The A/C system should be serviced only by trained automotive service technicians using approved refrigerant recovery/recycling equipment, trained in related safety precautions, and familiar with regulations governing the discharging and disposal of automotive chemical refrigerants.

- Before doing any electrical welding on vehicles equipped with anti-lock brakes (ABS), disconnect the battery negative terminal (ground strap) and the ABS control module connector.

- Do not expose any part of the A/C system to high temperatures such as open flame. Excessive heat will increase system pressure and may cause the system to burst.

- When boost-charging the battery, first remove the fuses for the Engine Control Module (ECM), the Transmission Control Module (TCM), the ABS control module, and the trip computer. In cases where one or more of these components is not separately fused, disconnect the control module connector(s).

- Some of the vehicles covered by this manual are equipped with a supplemental restraint system (SRS), that automatically deploys an airbag in the event of a frontal impact. The airbag is operated by an explosive device. Handled improperly or without adequate safeguards, it can be accidentally activated and cause serious personal injury. To guard against personal injury or airbag system failure, only trained Volkswagen Service technicians should test, disassemble or service the airbag system.

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Version 1.0

Cautions & Warnings

- Do not quick-charge the battery (for boost starting) for longer than one minute, and do not exceed 16.5 volts at the battery with the boosting cables attached. Wait at least one minute before boosting the battery a second time.

- Never use a test light to conduct electrical tests of the airbag system. The system must only be tested by trained Volkswagen Service technicians using the VAG 1551 Scan Tool (ST) or an approved equivalent. The airbag unit must never be electrically tested while it is not installed in the vehicle.

- Some aerosol tire inflators are highly flammable. Be extremely cautious when repairing a tire that may have been inflated using an aerosol tire inflator. Keep sparks, open flame or other sources of ignition away from the tire repair area. Inflate and deflate the tire at least four times before breaking the bead from the rim. Completely remove the tire from the rim before attempting any repair.

- When driving or riding in an airbag-equipped vehicle, never hold test equipment in your hands or lap while the vehicle is in motion. Objects between you and the airbag can increase the risk of injury in an accident.

I have read and I understand these Cautions and Warnings.

back **OK**

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